

GOOD BOATKEEPING TIPS

GET EQUIPPED

1. Get a Marine Sanitation Device (MSD) or port-a-potty for your boat. MSDs come in three Coast Guard-approved types (see below). Types I and II treat your sewage so you can discharge it legally; Type IIIs and port-a-potties hold it until you can pump or dump it out at your local marina. From the environmental impact perspective, a Type III MSD — when used correctly — may be the best because it conveys your boat waste into a local advanced sewage treatment system and eliminates the need for onboard use of potentially toxic tank treatment chemicals. A Type II MSD, and to a lesser degree a Type I, can also be effective if properly used and maintained, and if directions for chemical treatment are carefully observed.
2. Keep your MSD in good operating condition. Make sure all fittings, hoses and other pump mechanisms stay clean and lubricated. Keep a repair kit on board.

YOUR CHOICE OF MSDs

A Marine Sanitation Device (MSD) prevents pollution from the discharge of untreated sewage off a boat. According to Coast Guard regulations, all boats with an installed toilet must have one of the three types listed below.

Type I and II MSDs break up the sewage and disinfect it with chemicals. It is legal in most instances to discharge from either type directly overboard, but you must add the appropriate chemicals for treatment. Without this treatment, discharge from a Type I or II system is considered raw sewage and remains illegal within the three-mile limit. Type II MSDs, usually found on larger boats, provide more extensive treatment than Type I MSDs.

Type III MSDs, most commonly used by boaters, provide a holding tank for storing untreated sewage until it can be properly disposed of at an onshore pumpout station or by a mobile unit (see *Who to Call*). Adding chemical deodorizers does not constitute treatment and does not allow you to dump wastes overboard. Some Type III MSDs have a "Y" valve, which allows you to dump directly overboard when you are operating outside the three-mile limit (except within federally designated No-Discharge Areas). Within the limit, you must secure the valve in the closed position with a padlock or non-releasable wire tie or remove the handle entirely.

TYPICAL TYPE III MSD

BRUSH UP ON YOUR DISCHARGE ETIQUETTE

- * Be aware that Marin County's Richardson Bay is a "No-Discharge Area" where it is against the law to discharge any sewage, treated or not.
- * Never discharge untreated wastes into the Delta or Bay.
- * Never discharge treated sewage near sensitive shellfish beds and fish nursery grounds. Chemicals used to treat sewage can be harmful to aquatic organisms.
- * Never discharge in areas where others may be swimming, windsurfing, waterskiing or playing in the water, or in shallow bays, marinas or areas with little water movement or tidal flushing (see inside).
- * Discharging into Delta waterways can be more harmful than out in more open waters because of the Delta's confined nature, its popularity with swimmers and waterskiers and its many drinking water intakes.

SHARE AND CARE

- * Pat your local marina owner on the back for keeping pumpout, recycling and maintenance facilities in good working order. If a pumpout breaks down on you, let the marina owner know immediately.
- * If there's no convenient pumpout in your boating territory, encourage your local marina to install one. The owner might be eligible for assistance through the Clean Vessel Act of 1992, which provides grants for the construction or renovation of pumpout and dump stations. Those interested should contact the California Department of Boating and Waterways (see *Who to Call*).
- * Pass this guide on to a friend or crew member. Explain what you've done to improve local water quality and encourage them to follow in your wake.

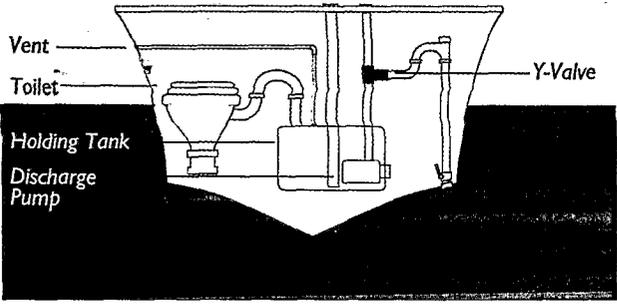
BE CLEAN AND BUY GREEN

- * Look for environmentally friendly disinfectants for your MSD. Whenever possible, choose products with ingredient lists that do not include chlorine, formaldehyde or other components that can be harmful to aquatic organisms and detrimental to pumpout facilities with septic systems.
- * Whatever you use, follow the instructions carefully and use the amount recommended for effective treatment.
- * Look for rapid-dissolving marine toilet paper specifically designed for MSDs.
- * Stock your boat with reusable cups, plates and other utensils so you can avoid throw and blow away plastic and styrofoam. Retrieve plastic trash, netting, six-pack yokes and other items from the water and bring them back to the dock.
- * Buy non-toxic detergents to



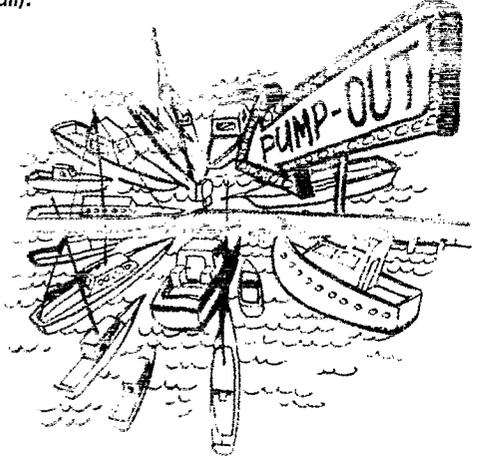
the Delta or Bay.

- ✦ Prevent oil and fuel spills by fixing engine and fuel line leaks promptly. Minimize spills before and during repairs by placing a drip pan under the leak or your work area. Place a bilge pillow (an oil-absorbing sponge) in your bilge to remove oil. Recycle your motor oil.



HOLD OUT FOR A PUMPOUT OR DUMP STATION

- ✦ Pump out your MSD or dump your port-a-potty at shoreside stations.
- ✦ Familiarize yourself with the location and operation of pumpout and dump facilities at your favorite shoreline haunts. The map and table inside tell you where to find 39 pumpouts and 13 port-a-potty dump stations around the Delta. A Bay map is also available (see *Who to Call*).
- ✦ To avoid the pump and dump routine altogether, cross your knees till you get to an onshore toilet. Boaters with Type III MSDs can also call a mobile pumpout service (see *Who to Call*).

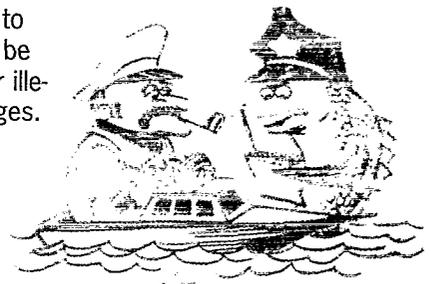


PERFECT YOUR PUMPOUT TECHNIQUE

- ↓ Follow pumpout instructions. If they're not posted, ask! Pumpout models vary, but here are some pointers on how to use a common one — the Pump-A-Head made by Keco.
 - ★Close the nozzle valve on the pump hose.
 - ★Remove your boat's deck waste fitting cover and insert the nozzle (attach the nozzle guard to the fitting if available).
 - ★Turn on the pump and open the nozzle valve.
 - ★Observe the flow through the sight glass. If flow doesn't occur within one minute, place the nozzle in water for 10 seconds. If the pump draws water, close the nozzle and reinsert it in the deck fitting. If not, check for an air leak in the line or plug in the holding tank air vent.
 - ★When the tank is empty, remove the nozzle from the fitting.
 - ★Place the nozzle in water for 30 seconds to rinse the hose. Rinsing helps prevent expensive clogs and breakdowns in the marina's sewer system.
 - ★Close the nozzle valve.
 - ★Turn off the pump. It's easy to forget this last important

IT'S THE LAW

- ⚠ Discharges of untreated sewage are prohibited within the navigational waters of the U.S. (an area that includes the entire Delta and Bay and that extends three miles seaward beyond the coast). 33 U.S.C. 1322
- ⚠ All boats with installed toilets must have a Coast Guard-approved Marine Sanitation Device if operating in U.S. navigational waters. 33 CFR Part 159
- ⚠ Vessels with a Type I or Type II Marine Sanitation Device must treat their sewage before discharge. For a Type I MSD, the fecal coliform count in the effluent must be no greater than 1000 per 100 milliliters of water and have no visible floating solids. For a Type II MSD, the fecal coliform count must be no greater than 200 per 100 milliliters, and suspended solids no greater than 150 milligrams per liter. 33 CFR Part 159
- ⚠ Discharges of any kind, treated or not, are prohibited in Richardson Bay — a designated No-Discharge Area. 40 CFR Part 140.4
- ⚠ Fines of up to \$2000 can be imposed for illegal discharges. CWA §312 (j)
- ⚠ All new marinas built in San Francisco Bay must install pumpout and dump facilities according to the San Francisco Bay Conservation and Development Commission's *Bay Plan*.
- ⚠ Discharges of oil or other hazardous substances are prohibited within 12 miles of the coast and within fisheries and marine preserves up to 200 miles from the coast under the Clean Water Act. 40 CFR Part 110.6



CFR: Code of Federal Regulations
 CWA: Clean Water Act
 U.S.C.: U.S. Code

The information presented in this guide is accurate to the best of our knowledge.

EVER NOSE INTO A SLIP...

trail a finger overboard, take a dip or cast a line out in the Delta's quiet backwaters, only to have a close encounter of the you-know-what kind?

Whether you've had a real-life, on-the-water run in with a suspect "floatable" or not, studies show the continued presence of untreated sewage in our nation's waterways. Gone are the days when we could just point the finger at industry or sewage treatment plants — both must now meet strict discharge standards. Much of today's waterway pollution originates from more diffuse sources such as runoff from cities and farms and wastes from recreational boats and other vessels. Indeed, the 1992 Clean Vessel Act identifies vessel sewage discharges as "a substantial contributor to localized degradation of water quality in the United States."

While the amount of sewage pollution contributed by boaters isn't enormous, it does impact the health of human water-users and the Bay-Delta ecosystem. Swimmers, windsurfers or boaters who come in contact with raw sewage can get stomach aches, diarrhea, skin rashes, hepatitis and even typhoid or cholera. Diners with a taste for raw clams, oysters or mussels face similar perils if the shellfish have been contaminated by sewage. Fish can die when the biological processes that break down sewage steal too much oxygen from their waters.

This guide tells boaters like you how to minimize the environmental and health impacts of your sport and keep our recreational waters clean. All of us after all, whether we sail, swim, surf, fish or simply stroll by the water, rely on one simple thing to make our experience pleasurable: a sparkling, clean, beautiful Delta.

RICHES BENEATH THE HULL

The Delta beneath your hull is the centerpiece of one of the nation's most productive and intensively used estuaries. In this Estuary, the Sacramento and San Joaquin rivers meet and flow into San Francisco Bay and the Pacific Ocean, mingling fresh and salt water in a zone that supports more biological diversity than is found in either salt or fresh water alone.

The Delta and Bay encompass roughly 1600 square miles and drain over 40 percent of California. They sustain both humans and wildlife, and their waters are used in many ways — to fill our taps, to cool and clean our industries, to treat our wastes, to generate our electricity and to yield our table salt. Their waterways and watersheds provide drinking water for over 20 million people, irrigate 4.5 million acres of farmland and support both Pacific Rim trade and the commercial harvest of herring, shrimp and crayfish. Last but not least, their coves, channels, open waters and vistas attract boaters, waterskiers and onlookers from around the world.

Despite such intensive human use, the Estuary remains miraculously rich in aquatic life. Clams, shrimps and crabs inhabit the bottom oozes, and two-thirds of California's salmon pass through on their way to spawning grounds upriver. Over 50 fish species have been found in the Delta and about twice as many in the Bay. Anglers can still catch halibut, bass and other delicacies in the Estuary, which supports about 4.4 million days of the recreational sport annually. Local people harvest freshwater clams from beds throughout the Delta (despite regional warnings that shellfish may be contaminated and thus hazardous to human consumers).

In recognition of these invaluable treasures and pleasures beneath the hull, boaters everywhere are joining other water users, marina owners and government agencies in preserving our Delta and Bay. This guide will help you be one of them.

THE POOP

- 1) A weekend boater flushing untreated sewage into the Delta produces the same amount of bacterial pollution as that of 10,000 people whose sewage passes through a treatment plant.
- 2) There are 240,156 registered boats in the Bay-Delta region and about 822,000 statewide — enough to make a sizable impact on water quality.
- 3) Studies have found elevated levels of fecal coliform bacteria — a commonly used indicator for measuring the presence of feces in water — where there are concentrations of recreational boaters.
- 4) Over 100 different intestinal pathogens — viruses, parasites and bacteria — can be found in sewage.
- 5) A greater concentration and variety of pathogens are found in the sewage of cosmopolitan cities (such as those in the San Francisco Bay Area) with numerous residents from other countries.
- 6) The BOD (Biological Oxygen Demand) in wastewater from recreational boats can be up to 8 times as high as that from raw municipal sewage, and up to 35 times as high as that from treated municipal sewage. BOD is a measure of the dissolved oxygen required to decompose organic matter in the water. An increase in organic matter can reduce the dissolved oxygen available for respiration by fish and aquatic organisms.
- 7) It takes an estimated 26-58 million gallons of water per boat to keep fecal coliform concentrations below the recommended level for shellfishing areas.
- 8) It only takes one-tenth of a part per million of chlorine — a substance present in many marine toilet treatment products — to harm or kill aquatic organisms in the vicinity of a discharge.
- 9) Fecal coliform counts dropped from 16,000 per 100 ml to 23 per 100 ml in California's Avalon Harbor after the harbor launched a boater education and clean water program. As part of the program, dye tablets are deposited in onboard toilets, making illegal discharges highly visible.

Sources: 1 & 8) S.F. Bay Regional Water Quality Control Board; 2) California Department of Boating and Waterways; 4 & 5) Managing Wastewater in Coastal Urban Areas, National Research Council, pp 203-226; 3, 6, 7) Pollution Impacts from Recreational Boating, Milliken & Lee, NOAA; 9) Avalon Harbor