

Practically Green: Engines, Bilges, and Interiors

Eco-friendly products and practices for belowdecks.

In the May 2008 *Practical Sailor*, we looked at eco-friendly marine maintenance products for outside the hull—less toxic bottom paints, paint strippers, waterline stain removers, and hull cleaners.

This spring, we move inboard to focus on areas where we can reduce or eliminate our impact on the environment. In most ways, this is an easier task because, with the exception of gray water from galley and head sinks, pollutants can be contained inside the boat until they can be disposed of properly.

The products mentioned here have worked well for *Practical Sailor*, but as always, we welcome tips from readers who have found gear and techniques not mentioned.

ENGINE FLUIDS

All four of the fluids in most auxiliary engines—fuel, lubrication oil, transmission fluid, and coolant—must be carefully controlled and never let flow into the water. Of these, the petro products—oil, fuel, and transmission fluid—are the worst environmental offenders, not so much because of big spills but because of thousands of small ones, via the bilge pump.

Few of us who have been boating for a while have a perfect record in this regard: A leaky gasket, a fumbled filter, a bad pour out of a quart container, and a few tablespoons of oil end up in the bilge. If you can't



Care should always be taken to keep engine fluids from finding their way to the water. Always clean up oil spills immediately, no matter how small.

get to it instantly, that oil is likely to leave the boat with the bilge water, unless you have an oil/water separator in the pump discharge line. It happens all the time. Multiply that by thousands and thousands of boats, and it's bad.

Any oil spill needs to be cleaned up right away. It's illegal to pump it overboard, and besides, if the boat is rocking, waiting even a few minutes invites a hellish petro-coating of sump-sides (often raw fiberglass that will never look the same), wires and connections, etc.—worse than you would think possible from a small amount of oil. Oil left in the bilge attracts dirt, which creates a sludge that can clog your bilge pump and increase your fire hazard. An oily bilge is a shame.

How do you soak up or wipe up that spill, especially if it's sitting on top of water already

in the bilge? The results of a *PS* test reported in the March 2002 issue were decisive: Among six products evaluated for their ability to absorb petroleum products (with a bit of antifreeze in the test bins to confuse things), **3M Sorbent Pads** and **MDR Oilzorb Engine Pads** were decidedly more efficient—and cheaper—than products engineered to be biodegrade hydrocarbons or turn them into solids over a long period of time.

Both the flat absorbent sheets and the rolled-up or massed versions contained in plastic mesh tubes or bags (so-called bilge socks, mini-booms, or engine-pan pads) are made of ran-

Petroleum-absorbing pads, either flat or rolled into bilge booms, are the first line of defense against spills. Often they're all that's necessary.





High-quality canvas winter covers are initially expensive, but pay for themselves over time. While they're more labor-intensive than having a boat shrinkwrapped, they go a long way toward keeping plastic out of the landfill.

One of the worst sources of boatyard plastic pollution in recent years has been the now-ubiquitous shrink-wrap boat cover, which works once and then has to be disposed of. Despite the fact that there are recycling programs available for these covers, many are simply stuffed into dumpsters, destined for landfills.

Clean-marina issues, including what to do with all that used shrink wrap, are decided at state level. To see where things stand in your state, check out www.cleanmarinas.noaa.gov.

If a marina operator sidesteps his legal or ethical responsibilities, dealing with the wrap is up to boat owners. Get a Dr. Shrink Recycling Kit (\$25 for one and—boatyard operators note—\$1,100 for 50). The kit contains a clear bag big enough to hold 600 square feet of shrink wrap, instructions on how to remove and pack the material, and a pre-paid UPS return shipping label.

The cover will be sent to the REBAG recycling program of Dr. Shrink, a company that claims to be “The World’s Largest Shrink Wrap Supplier.”

Instead of paying a marina to shrink-wrap your boat for several seasons, consider treating it to a long-lived, high-quality canvas cover over a fitted frame. This especially makes sense if you plan to own your boat for a long time, or it’s a high-value boat with good prospects of resale. A number of sailmakers and canvas shops will fabricate these covers, and patterns already exist for a large number of production boats.

Encourage Clean Marina Practices at Your Boatyard

Most marina operators these days are acutely conscious of federal, state, and local requirements, and strive to meet them—not always with great enthusiasm, but at least to avoid fines and loss of business. But take a look in many marina dumpsters, and you’ll see that although the boatyard workers and your fellow marina dwellers have managed to keep a lot of pollutants out of the water, the stuff is just going to get dumped right into a landfill.

Urge your boatyard operator to set up designated areas for the remnants of solvents and paints, aerosol cans, oil-soaked rags and pads, scrap lumber, dead batteries, and dead electronics.

domly arranged polypropylene fibers that wick up petroleum products almost instantly, while resisting water absorption.

Every bilge should have a sock or pad dropped in at the beginning of the season, and pushed to the deepest part of the sump. These will absorb a fairly large spill, a quart or more of pure oil if necessary, so they easily handle the odd errant drip over the course of a season.

Absorbers like this are sold by a number of companies, including Applied Science and Clean

Water Solutions. West Marine carries its SeaFit store brand. We’ve used several types. Some shed and tear more than others, and some claim to be able to be wrung out and reused, but we haven’t noticed a major performance difference. A head-to-head test is on the horizon, but meanwhile, the 3M and MDR pads are proven.

Another product we’ve tested and still use, for both lube oil and transmission fluid, is the **Jabsco Oil-Changing System**, reviewed in the January 2007 issue. It is composed mainly of a self-priming, oil-resistant, 4-amp pump mounted on a fully enclosed 3.5-gallon polypropylene tank with cap and vent,

plus battery leads and clamps, and a dipstick tube.

The main advantage of the system, aside from its labor-saving convenience, is that its self-containment eliminates almost all avenues for an oil spill. Finish the job, take the tank home, and get the oil to a recycling center at your convenience.

For a spill-proof oil-changing routine, put absorbent pads in strategic places to catch drips—under the pan, if you’re draining from there, or surrounding the dipstick hole. Put one under whatever jug you’re using to catch the used oil. We usually stuff one in our belts to grab in a hurry and keep all of the needed materials close at hand: filter wrench if needed; funnel and hose; and a bucket or sawn-off milk jug to hold the drippy old filter. Take your time with the job, and don’t take shortcuts, e.g. “Dang, I left the



An oil/water separator, like this one from Vetus, is easily installed in the bilge pump’s discharge line and can grab a small spill before it leaves the boat.

funnel in my car. I can probably just aim for the fill hole.”

The same goes for refueling. Keep a flat absorbent pad handy at the fill hole. When pumping fuel from an uncertain source, we like to put a cup or two into a clean glass jar and eyeball it. If it looks gnarly or water appears at the bottom, avoid the fuel, or at least plan to change your filters soon. Assuming it’s clean, pour the contents of the glass jar into the tank.

All of this can involve drips and spills. Thus, the pad. In the worst case, a pad can absorb the contents of the jar. Contaminated absorbent pads, bags, and bilge socks should be kept in sealed plastic bags until they can be deposited safely at a HazMat center.

Another useful device is the **Vetus Bilge Water/Oil Separator** (\$116 at www.jamestowndistributors.com). (See photo, page 8.) Although we’ve not yet tested it, the Vetus separator is designed to be easily installed in the discharge line of the bilge pump and automatically grab petroleum contamination before it leaves the boat. In our opinion, these filters should be required equipment on all new recreational boats.

DESCALING

Although the raw water that flows through an engine’s heat exchanger obviously contains no pollutants, chemical cleaning of heat exchangers can produce a toxic soup.

One recommended way of cleaning the heat exchanger is to remove it from the engine and take it to a radiator repair shop where it can be properly descaled. This is often impractical, so those who do the job themselves often resort to aggressive chemicals like MaryKate On&Off, which contains high percentages of hydrochloric and phosphoric acids and is very unpleasant to work with. These chemicals, when used excessively, can eventually leach metal and erode the heat exchanger.

In the March 2008 issue, *PS*

matched On&Off against **RydLyme Marine** in a descaling test (by melting seashells, whose calcium carbonate is the same stuff that occludes heat exchangers) and found that RydLyme took longer than On&Off to do the job, but did it just as well. A heat exchanger filled with On&Off hisses and bubbles itself clean in just a few minutes; giving it 10 or 15 minutes with RydLyme should be no hardship, and RydLyme’s much milder composition is easier on its human handlers, the heat exchanger, and the environment. It’s biodegradable and is similar to another environmentally sound product called **Barnacle Buster** from Trac Ecological, which *PS* reviewed in the May 2007 issue.

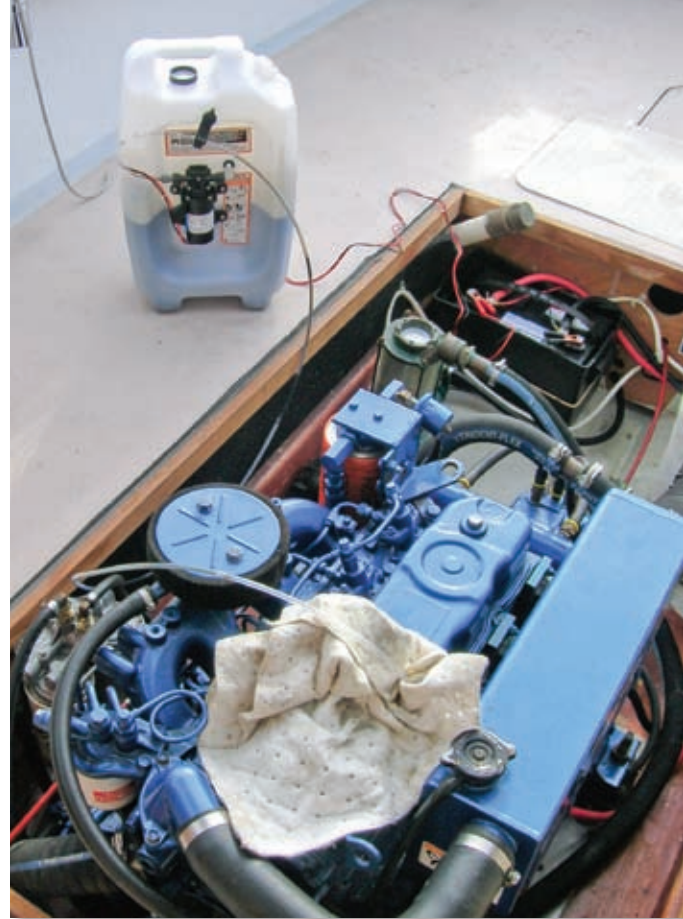
BILGE CLEANERS

In the March 2006 issue, *PS* reviewed 15 emulsifying bilge cleaners designed to combine the hard-to-mix elements of oil and water into a single grubby liquid that can be pumped out. The trick is this: That emulsion cannot be pumped into the water. It’s illegal and can result in big fines—justifiably so.

So although these products help corral

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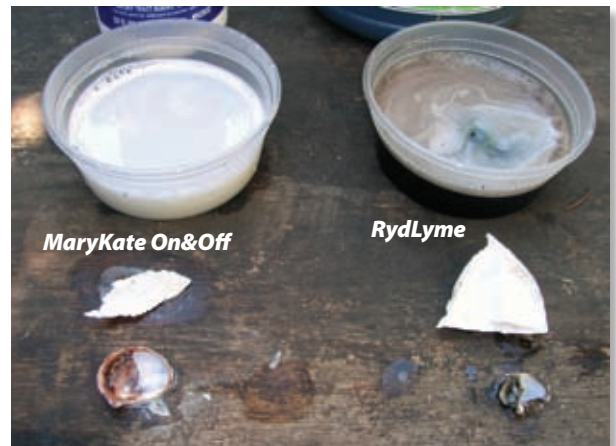
To test the descaling abilities of MaryKate On&Off vs. RydLyme, we melted calcium carbonate (shells). This after photo shows the melted remains of the slipper shell and the smaller quahog.



The Jabsco Oil-Changing System is self-contained, eliminating most of the paths to a spill. It can also be used to change transmission fluid.

oil in the bilge and keep it from coating surfaces, don’t let it leave via the bilge pump. Get out your trusty Beckson Thirsty-Mate, and pump the bilge mixture into a jug or jugs. Check with your local marina operator, town recycling center, or Coast Guard information office to find out where to take the resulting sludge.

Yes, it’s a huge pain, but it’s the only way. And that is why those instant absorbing sheets and pads





Litter: Hook It, Gaff It, Bag It

Ever find yourself shaking your head at the sad sight of a Mylar balloon bobbing forlornly on the blue? A plastic bottle floating at the tideline? A plastic shopping bag on the beach? Seaweed tangled with monofilament? Here's an idea: Pick it up!

More and more boaters are keeping nets, boathooks, and gaffs at the ready, and a bag in the lazarette, to deal with the trash and flotsam they run across. Send the kids along the riverbank or harborside in the dinghy to see how much debris they can collect. When you walk the beach, take a jab-stick and bag some Styrofoam cups.

And there's nothing better to tune up those boathandling and man-overboard-retrieval skills than jibing downwind to catch a drifting balloon or plastic bag. At least once or twice a year, join a local cleanup group for a shore patrol, whether they're conservationists, bird-watchers, school kids, or duck hunters. Or visit www.oceanconservancy.org and click the "Take Action" tab to find out more about the International Coastal Cleanup.

are great. If you can catch the oil drip or spill right away, you can make a guilt-free discharge upon the waters from your bilge pump.

Recommended products in the March 2006 evaluation included **CRC Industries' Big Bully Natural Orange Bilge Cleaner**, **Clean Water Solutions' Microbial Powder**, and **Star brite's Sea Safe Biodegradable Bilge Cleaner**. **Star brite's Super Orange Bilge Cleaner** was the Budget Buy.

SOAPS AND DETERGENTS

Gelcoated fiberglass, stained and varnished wood, stainless steel, bronze, brass, fabrics, and glass—there are numerous cleaning demands belowdecks, and even more choices for cleaning products.

And, much depends on how badly the surface is soiled or stained; what it's stained with; how much elbow grease you're willing to put into the job; and how eco-conscious you want to be, especially if your cleaning materials are headed for a shoreside resting place.

PS has done relatively little testing of supermarket or home-brew cleaning products, except to include some representatives in tests against marine-oriented cleaners, but based on some collective experience and input from readers, we can at least make a few suggestions.

If you keep in your galley reasonable quantities of lemon juice, white vinegar, salt, baking soda, and olive

oil, you already have the ingredients to handle most of your routine cleaning chores, although you may need to bear down harder or apply twice to get good results. The recipes below are culled from different sources; you can experiment with varying ratios and solutions to see what works best for you.

- For **general, non-abrasive cleaning** of gelcoated surfaces and glass: 1:12 mixture of white vinegar and fresh water.

- **General scouring powder:** Baking soda and fresh water paste, baking soda and vinegar paste, or baking soda and lemon juice paste (do not use on Awlgrip or paint).

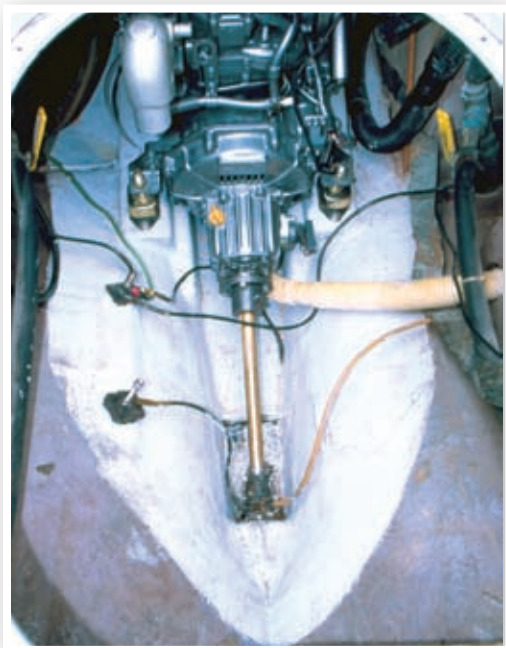
- **Copper cleaner:** lemon juice and water.

- **Brass cleaner:** Worcestershire sauce or ketchup. Let sit, then polish.

- **Mildew:** Paste of 1:1 mixture of lemon juice and salt (on surfaces that won't be scratched by salt).

- **Wood polish:** Straight olive oil or almond oil, or those mixed with lemon juice.

In the commercial realm, among the green products we can recommend are **Dr. Bronner's Sal Suds** (for hard surfaces and dishwashing); **Simple Green**, which has carried its biodegradable, non-toxic credentials



Painting your bilge white enables you to easily spot oil drips and leaks before they become a problem.

Just because a bilge cleaner is biodegradable and eco-friendly doesn't mean it can be pumped overboard along with the oil it handles. The cleaner on the right carries the U.S. EPA Design for the Environment logo and says it "removes oil, grease & sludge." The best any bilge cleaner can do is join the oil and bilge water to form an emulsion, which we, the boatowners, have to remove. No product will make the oil or fuel magically disappear.



among sailors for a long time; **Spray Nine's Green Marine Multi-Purpose Cleaner**, and plain old blue **Original Windex** (with Ammonia-D), which was never very terrible to begin with, but has been reformulated by SC Johnson to have an even lighter environmental impact.

A good start, when studying commercial cleaners, is to visit the Eco-Labels Center at the Consumer Reports' environmental website, www.greenerchoices.org, for more information about what certifications, claims, and labels really mean.

Also, look for products that carry the U.S. Environmental Protection Agency's Design for the Environment (DfE) logo (below). The program aims to reduce the load of harmful chemicals used in the making of a wide range of industrial and consumer products, and also to encourage energy-efficient procedures.

In order to carry the DfE logo, products must meet strict criteria for eco-friendliness. Marine cleaner makers that offer DfE-approved products include **Spray Nine**, **West Marine (Pure Oceans line)**, and **Thetford Marine**. Many of these cleaners are 100-percent biodegradable and come in recyclable containers.

For more information, check out www.epa.gov/dfe.



IT'S UP TO US

It's not what we buy, it's what we do that really matters. True environmental responsibility requires not just a commitment to buy eco-friendly products, but constant awareness and good practices of efficiency and conservation. Sure, it's good to buy a hybrid car or a bunch of green credits, but making the personal effort to pick up a plastic bottle out of a storm drain and recycle it shows even greater spirit.

Because we all share a love of the water, we should be sure to properly dispose of our boats' pollutants and hazardous materials. This can be made easier by getting in sync with local recycling and HazMat schedules and keeping tools and receptacles on hand to deal with the discarded materials. Old jerry jugs make great repositories for used oil until it can be taken to a recycling center. Having bins or boxes set aside also makes it more convenient to store items like expired flares and fire extinguishers and dead batteries until they can be recycled or disposed of. (But take care not to mix items that shouldn't be mixed.)

An excellent source of general clean boating tips can be found at the BoatU.S. Clean Water Page (www.boatus.com/foundation/cleanwater/). For recycling information specific to your area, the go-to source is Earth911 (www.earth911.com). Again, be aware of your town's programs and services. If you can do better than your town, then help your local officials to get on the proper course. ▲

Cleaners must meet strict eco-friendly standards set by the U.S. EPA in order to carry the Design for the Environment logo.

CONTACTS

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BARNACLE BUSTER
954/987.2722, www.trac-online.com

CLEAN WATER SOLUTIONS
888/902-4141,
www.cleanwatersolutionsinc.com

CRC INDUSTRIES
800/556-5074, www.crcindustries.com

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877/786-3649, www.drbronner.com

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