

## Spring Start-Up: Antifreeze Collection & Disposal

Antifreeze can be harmful to fish and other aquatic life, especially when multiple boats flush their engines and holding tanks close to fish spawning grounds. Even the less toxic propylene glycol can cause fish kills. Waste antifreeze can also contain heavy metals or fuel from engines that classify it as hazardous waste.

### Boat Engine

If your boat has a large engine, do not try to flush antifreeze on your own. Take your boat to an experienced service technician. Otherwise, follow these steps to safely flush your boat engine:

1. Move to a location away from open waters.
2. Check your bilge and clean out any oil with a bilge pillow or absorbent pad.
3. Attach a hose directly to your intake port (for inboards and some inboard / outboards) or use a flushing kit (ear muffs) for engines without a port.
4. Attach the other end of the hose to a water source.
5. Attach a second hose over the exhaust port and place the other end into a 5 gallon bucket to catch the antifreeze as it exits the engine. Have another 5 gallon bucket ready for when the first bucket is full.
6. Turn on the water and start your engine.
7. Collect the water and antifreeze mix in the two buckets. Let the remaining water drain onto the ground until the engine has warmed up.
8. Turn off the engine and water.
9. Dispose of the diluted antifreeze at a marina or automotive center that accepts and recycles antifreeze. The initial 5 gallon bucket may contain antifreeze suitable for reuse next winter. If recycling is not available, pour the antifreeze into a sanitary sewer that flows to a local wastewater treatment plant, such as a toilet or basement drain. Do not pour it into a storm sewer, which discharge directly into streams, lakes, or wetlands. Never dump antifreeze into a septic system.

### Freshwater Holding Tank

1. Connect a hose to the sink faucet or place a funnel with a hose attached under the faucet and place the other end into a 5 gallon bucket.
2. Turn on the faucet and start filling the bucket.
3. Collect the antifreeze until the water runs clear.
4. Dispose of antifreeze according to step nine above.

### Sewage Holding Tank

Use the head as usual and pump out when needed. The antifreeze and sewage mix will go directly to a sewage treatment plant.

## Engine Maintenance

The general maintenance of boat engines can generate pollutants and waste that can be harmful to the environment. Some of these potential pollutants include solvents, paints, lubricants, oils, antifreeze, fuel, batteries, and bilge switches that contain mercury. Proper use, storage, and disposal are crucial to keeping these pollutants out of the environment.

### Routine Engine Maintenance

- ✓ Check with marina staff to find out where engine maintenance is allowed at the marina.
- ✓ Avoid unnecessary parts cleaning.
- ✓ Pre-clean engine parts with a wire brush to reduce the need for solvents.
- ✓ Use volatile organic compound-free (VOC-free) solvents when necessary.
- ✓ Use engine cleaning products sparingly.
- ✓ Clean parts in a container or parts washer so that fluids can be collected and recycled.
- ✓ Cover the filter with a plastic bag before removal to prevent oil spills.
- ✓ Drain all fuel from parts prior to disposal.
- ✓ Dispose of all used oil and materials soaked with oil as hazardous waste. Do not discharge oil into the water—it is prohibited by law.
- ✓ Ask if your facility has a collection area for maintenance waste from boaters, such as used oil filters, waste oil, and lead-acid batteries. If not, take them to a household hazardous waste facility or used oil recycling center.
- ✓ Use systems that remove crankcase oils through the dipstick tube to prevent spills during oil changes. Ask your marina manager if the marina has this service available.
- ✓ Keep an oil absorption pad in the bilge or below the engine to collect spilled products.
- ✓ Clean work areas with absorbent materials and a broom.
- ✓ Keep engines properly tuned for efficient fuel consumption, clean exhaust, and lower operating costs.
- ✓ Keep your engine clean to make it easier to spot and correct small leaks before they become big problems.

### Winterizing your Boat

- ✓ Use only propylene glycol antifreeze to reduce threat to aquatic wildlife. It is blue, pink, or clear-colored and less toxic than other antifreezes.
- ✓ Fill fuel tanks to 90 percent capacity during winter storage to reduce condensation buildup and prevent leaks.
- ✓ Consider adding a fuel stabilizer to prevent fuel from becoming stale.
- ✓ Flush and collect winterizing agents and antifreeze from the engine prior to launch each season and recycle or dispose of them properly. Check with marina management for recycling/disposal containers.

## Hull Maintenance

Hull maintenance can create environmental hazards if it is not conducted in a controlled area. Sanding and blasting used to remove paint can release toxic heavy metals, such as copper and tin. Many chemicals in antifouling paints are designed to leach out and prevent bottom growth on the hull. These chemicals can find their way into the water and may be consumed by aquatic wildlife.

### Routine Hull Maintenance

- ✓ Perform repairs and maintenance activities in designated areas and follow your marina's maintenance rules.
- ✓ Work indoors or under cover whenever wind could potentially blow debris into the water.
- ✓ Do not work on your hull near the water.
- ✓ Avoid cleaning your hull when the boat is in the water to reduce the release of heavy metals into water.

### Sanding, Grinding, or Scraping

- ✓ Use dust-free sanders and other environmentally-friendly tools, such as vacuum sanders and grinders, if possible. Ask your manager if these tools are available through the marina.
- ✓ Do not sand on windy days.
- ✓ Place a tarp or filter cloth beneath the hull to catch sanding dust and paint drops when working over unpaved surfaces.
- ✓ Clean up all debris, trash, sanding dust, and paint chips immediately following any maintenance or repair activity. Dispose of the debris in your regular trash at home or in designated receptacles at your marina.
- ✓ Vacuum or sweep loose debris when sanding or grinding over paved surfaces.

### Painting and Varnishing

- ✓ Buy paints, varnishes, solvents, and thinners in amounts that can be used within a year to avoid having to dispose of stale products.
- ✓ Use water-based paints and solvents when possible.
- ✓ Switch to longer lasting, harder, or nontoxic antifouling paint.
- ✓ Select a bottom paint developed for freshwater lakes and rivers. Check with your marina operator for recommended paints appropriate for freshwater use.
- ✓ Mix paints and solvents at a designated area away from shore.
- ✓ Transfer mixtures to work areas in tightly covered containers of 1 gallon or less.
- ✓ Share leftover paint and varnish with other boaters. Take unused products to a hazardous waste facility or ask your marina manager where to dispose of them.
- ✓ Reuse solvents and thinners by allowing solids to settle and draining the clean product off the top.
- ✓ Dispose of dried, settled solids in your trash at home or in designated receptacles at the marina.
- ✓ Thoroughly dry all empty paint cans and old brushes before disposing of them in the trash.
- ✓ Discard rags containing solvents, paints, thinners, or teak treatment in the trash.

## Fuel & Oil Control

Petroleum in or on the water is harmful to aquatic life such as fish, birds, and invertebrates and can lower drinking water quality. The Water Pollution Control Act prohibits the discharge of oil of any kind into or upon the navigable waters of the United States, including the Great Lakes. This includes any discharge that causes a film, sheen, discoloration, sludge, or emulsion on or beneath the surface of the water.

### Spill Response

- ✓ When you see oil, gas, or diesel on the water:
  1. Protect yourself and others.
  2. Identify the spilled material and determine how much has spilled, if possible.
  3. Notify marina staff of the spill.
  4. Confine the oil or diesel spill using absorbents in your marina spill kit, if available. If a spill happens on land, confine it before it can spread to the water. Do not try to confine gasoline spills. Due to the risk of explosive fumes or fires, gas spills should be allowed to dissipate and vaporize from the water surface.
  5. Stop the source.
  6. Contact authorities. Call the U.S. Coast Guard National Response Center at (800) 424-8802 and the Illinois Emergency Management Agency at (800) 782-7860.
  7. Clean up the remaining oil, gas, or diesel. Do not use emulsifiers or soaps to treat or disperse a spill. This is prohibited by federal law and may result in a significant fine.
  8. Remove or neutralize any hazardous materials that have accumulated during the spill to decontaminate the site and equipment.
  9. Dispose of used absorbent material appropriately.

### Preventive Equipment

- ✓ Install a fuel/air separator along your vent line. These allow air, but not fuel, to escape through a vent opening.
- ✓ Attach a safety nozzle to portable gas cans used to fill outboard engines. The nozzle will automatically stop the flow of fuel when the receiving tank is full.
- ✓ Install a bilge pump switch that leaves an inch or two of water in the bilge to prevent oily bilge water from being discharged. Alternatively, connect a bilge water filter to your bilge pump to remove oil, fuel, and other petroleum hydrocarbons from the water.
- ✓ Buy a fuel-efficient, low emission model when it is time to replace your engine.

### Fueling Practices

- ✓ Wait for a trained attendant to fuel your vessel or portable tank. Illinois law prohibits self-service at marinas.
- ✓ Ensure attendants fill portable tanks in collections pan to reduce spills.
- ✓ Ensure tanks are filled to no more than 90 percent capacity.
- ✓ Install a fuel/air separator or an air whistle in your tank line to prevent spills. Ask the marina staff for information on who can provide this service.
- ✓ Fill your tank before leaving port instead of right after returning to reduce spills caused by thermal expansion.
- ✓ Inspect the bilge after fueling for leakage or fuel odors.
- ✓ Turn on bilge blowers for several minutes before starting the engine and ventilate until odors are gone.

## **Bilge Maintenance**

- ✓ Keep your engine well-tuned to minimize the amount of oil that is released with bilge water. Be sure there are no leaking seals, gaskets, or hoses.
- ✓ Keep an oil absorption pad or bilge sock in the bilge or below the engine to absorb spilled oil.
- ✓ Replace used oil-absorbent materials regularly.
- ✓ Look for contractors or marinas that offer a bilge pump-out service.
- ✓ Do not use soaps or detergents to clean the bilge.

## **Oil and Oil-Absorbent Material Disposal**

- ✓ Recycle used oil. Call your municipal solid waste department or the Illinois Environmental Protection Agency for recycling locations in your area.
- ✓ Bring used solvents and waste gasoline to local hazardous waste collection centers. Ask marina staff if waste collection is available at your marina.
- ✓ Do not dump waste oils and engine coolants on the ground or into storm drains, dumpsters, or open waters.
- ✓ Store and dispose of fuels and engine oils separately from each other and from other materials, such as antifreeze and solvents. These materials can become hazardous waste when they are combined.
- ✓ Dispose of used oil-absorbent material as appropriate for the type of product and how it was used:
  - ♦ Standard absorbents saturated with oil or diesel only (no gasoline) may be wrung out over oil recycling bins and reused.
  - ♦ Bioremediating bilge booms may be disposed of in your regular trash as long as they are not dripping any liquid. Because the microbes need oxygen to function, do not seal them in plastic bags.
  - ♦ Small pads used to clean up minor drips at the fuel pump may be allowed to air dry and be reused.
  - ♦ Standard absorbents saturated with gasoline should be disposed of as hazardous waste.
- ✓ Check with the marina operator before disposing of any used material.

## Boat Cleaning

Some common solvents and cleaners can cause harm to aquatic environments if care is not taken during their use, especially where many boaters are using the same chemicals. Because marinas are located in a sheltered environment, pollutants tend to build up within their basins.

### Clean Carefully

- ✓ Clean as much of your boat as you can before launching it for the season.
- ✓ Wash your boat at designated areas away from the shoreline. Do not wash your boat on a paved surface that allows the water to flow into a storm sewer and then into the nearest stream or lake.
- ✓ Use the least amount of pressure necessary to remove growth but still leave the paint intact when pressure washing ablative/antifouling paint. Use a regular garden hose and a soft cloth where practical.
- ✓ Use natural cleaners, such as lime juice, borax, and baking soda, if water is not enough. See the list of alternative cleaners outlined in the Nontoxic Cleaning Alternatives tip sheet.
- ✓ Use cleaning products sparingly and only when water and natural cleaners are not working.
- ✓ Use cleaning products that are non-toxic and phosphate free. Follow the instructions on the label.
- ✓ Avoid detergents that contain ammonia, sodium hypochlorite, chlorinate solvents, petroleum distillates, and lye.
- ✓ Clean teak with a mild soap and abrasive pad, nylon brush, or bronze wool.
- ✓ Collect all paint chips, dust, and residue after washing. Dispose of them in your regular trash at home or in designated marina receptacles.
- ✓ Wash your boat above the waterline only when on the water.
- ✓ Use a sponge and plain water to wash your boat while on the water. Do not use cleaning solvents.
- ✓ Keep your boat waxed to prevent surface dirt from becoming ingrained in the hull and to make it easier to clean.

### Be a Conscientious Consumer

- ✓ Buy cleaning products that have either no product warning or only a "caution" listed on the label. Labels convey information about the degree of hazard associated with a particular product, and a "caution" signals a less hazardous product.
- ✓ Be wary of unqualified general claims of environmental benefit, such as "ozone friendly." Look for products with more descriptive labels, such as "This product is 95 percent less damaging to the ozone layer than past formulations that contained chlorofluorocarbons (CFCs)."

## Non-Toxic Cleaning Alternatives

Use cleaning products sparingly and minimize the amount discharged into the water. While baking soda, vinegar, lemon juice, and vegetable oils are far less harmful than bleaches, scouring powders, or detergents, they may still be harmful to marine life. Dispose of all used cleaning products on shore. The table below provides non-toxic alternatives to typical cleaning products for your boat and home.

Products	Alternative
Air freshener	Open box of baking soda left out
Aluminum cleaner	2 tablespoons of cream of tartar in 1 quart of hot water
Brass cleaner	Worcestershire sauce or a paste made of equal amounts of salt, vinegar, and water
Chlorine bleach	Borax or baking soda and water
Chrome cleaner/polish	Apple cider vinegar to clean and baby oil to polish
Copper cleaner	Lemon juice and water or a paste made of lemon juice, salt, and flour
Disinfectants	½ cup of borax in 1 gallon of water
Drain opener	Plumber's snake or ¼ cup baking soda and ¼ cup vinegar in several quarts of water
Fiberglass stain remover	Paste made of baking soda and water
Floor cleaner	1 cup vinegar in 2 gallons of water
General cleaner	Baking soda and vinegar or lemon juice combined with borax paste
Hand cleaner	Baby oil or margarine
Head and shower cleaner	Baking soda
Mildew remover	Paste made of equal parts lemon juice and salt or white vinegar and salt
Rug/upholstery cleaner	Dry corn starch
Scouring powders	Baking soda or ½ lemon dipped in borax
Stainless steel cleaner	Baking soda or mineral oil for polishing and vinegar to remove spots
Toilet bowl cleaner	Baking soda
Window cleaner	1 cup vinegar in 1 quart of warm water
Wood polish	Olive or almond oil (interior walls only)

Adapted from: Buller (1995) and MA Department of Environmental Management, Environmental Hazards Management Institute.

## Wastewater Containment & Disposal

All boats generate wastewater from marine toilets, laundry and dishwashing facilities, or bilge waste. Raw or poorly treated boat sewage is harmful to human health and water quality. The nutrients in sewage also promote algae growth and may result in fish kills. The Clean Water Act prohibits the discharge of raw or partially treated sewage into any body of water.

### Vessel Sewage

- ✓ Use shoreside restrooms when docked and before heading out on the water.
- ✓ Use the marina's pump-out or dump station. If there is not a pump-out or dump station available, check with marina management. They may have a cooperative agreement to use another marina's pump-out station
- ✓ Radio ahead to determine the operation hours for a particular pump-out facility.
- ✓ Have your marine sanitation device (MSD) inspected regularly to ensure that it is functioning properly.
- ✓ Keep your MSD disinfectant tank full, use biodegradable treatment chemicals, and follow the manufacturer's suggested maintenance program.
- ✓ Put environmentally friendly additives in your MSD. Check with your marina operator for more information.
- ✓ Do not dispose of fats, solvents, oils, emulsifiers, disinfectants, paints, poisons, phosphates, diapers, or similar products in your MSD.

### Holding Tanks

- ✓ Consider installing a Type III MSD with a holding tank.
- ✓ Control odor by installing fiberglass or metal tanks, keeping the number of connections to a minimum, and ensuring seals are tight.
- ✓ Use enzyme-based products in your holding tank. Enzymatic products use biological processes instead of harsh chemicals to break down sewage.
- ✓ Pump out and rinse your holding tank prior to using an enzyme product if you have used chemical-based additives in the past. Chemical residues may interfere with the effectiveness of enzyme-based products.
- ✓ Avoid holding-tank products that contain quaternary ammonium compounds (QACs) and formaldehyde. These products may disrupt the function of municipal sewage treatment plants that receive wastewater from marina pump-out stations.

### Portable Toilets

- ✓ Consider buying a portable toilet to contain raw sewage if you have a small vessel.
- ✓ Empty portable toilets at the pump-out stations. Do not dump waste into marina toilets.

### Graywater

Graywater includes soaps and detergents from boat showers and dishwashing and laundry facilities. These soaps, even those labeled "biodegradable," contain substances harmful to marine life.

- ✓ Use shoreside showers, dishwashing stations, and laundry facilities whenever possible.
- ✓ Use all soaps and cleaners sparingly and only when plain water is not working.
- ✓ Use low-nitrogen and phosphorous-free detergents for onboard laundry, dish washing, and general cleaning.

## **Bilges**

Bilges can be a major source of wastewater pollution in marinas. When the bilge pump is activated, pollutants that collect in the bilge, such as engine oil and lubricants, are pumped out into the water. Additional bilge water concerns and good boating practices are included in the Fuel and Oil Control tip sheet.

- ✓ Do not discharge bilge water that has an oily sheen.
- ✓ Use bilge socks to collect floating oil and fuel in the bilge.
- ✓ Replace pads when they are heavily saturated or soiled.
- ✓ Install a bilge pump switch that leaves an inch or two of water in the bilge.
- ✓ Install a bilge water filter to remove oil and fuel from the water.

## Waste Containment & Disposal

All boaters generate waste that could threaten aquatic wildlife and human health. Plastics and other solid wastes can injure or kill aquatic life and birds by trapping or entangling them. And corrosive or toxic hazardous waste must be properly stored, disposed of, and recycled. Federal and state laws make it illegal to discard any solid or hazardous wastes in the water.

### Solid Waste

- ✓ Have a waste container on your boat.
- ✓ Do not let trash get thrown or blown overboard. If trash blows overboard, retrieve it.
- ✓ Pick up trash that you come across, either floating in the water or on land.
- ✓ Properly dispose of all trash in marina trash cans and recycling bins. Replace the lids after using them so that waste does not blow out of the cans or bins.
- ✓ Bring used monofilament fishing line to recycling bins at your tackle shop or marina.
- ✓ Purchase refreshments in recyclable containers and recycle them.
- ✓ Pack food in reusable containers.
- ✓ Buy products without plastic or excessive packaging.
- ✓ Use recyclable containers and reusable bags in place of plastic wrap and disposable bags.
- ✓ Cut rings of six-pack holders prior to disposal.
- ✓ Recycle cans, glass, newspapers, antifreeze, oil, and lead batteries.
- ✓ Find out if your marina recycles shrink wrap used for winter boat storage. Recycle your shrink wrap if possible.
- ✓ Clean up after your dog and deposit all pet waste in a trash can or appropriate receptacle.
- ✓ Avoid feeding wild birds, including ducks, geese, and seagulls, in the marina. Feeding birds encourages them to flock to the marinas and become long-term residents. Bird waste can contaminate water and create a mess on boats and walkways.
- ✓ Contact a marina staff member immediately if you see a problem with waste at your marina.

### Fish Waste

Fish cleaning may damage water quality if the wastes are discarded into the poorly flushed marina basin.

- ✓ Ask your marina operator about the facility's fish cleaning and disposal policy.
- ✓ Clean your fish at a fish cleaning station only to keep the marina and water clean, keep odors down, and reduce nuisance birds and pests.
- ✓ Double bag waste and dispose of it at home or in a marina dumpster designated for fish waste.
- ✓ Compost your fish waste if your marina has a waste composting program.

### Maintenance Waste

Check first with your marina operator for proper disposal or recycling options at the marina. Otherwise, dispose of the following items according to the recommendations listed below.

<b>Waste Product</b>	<b>Disposal Method</b>
Oil	Recycle or take to a waste oil collection facility
Oil filters	Puncture and hot drain for 12 hours. Recycle oil and canister at a household hazardous waste facility (HHW) or oil collection facility
Antifreeze	Recycle or send to a HHW facility
Paint and varnish	Allow to dry completely and solidify and dispose of in regular trash
Solvents, gasoline, and pesticides	Bring to a HHW facility
Expired emergency flares	Bring to local fire department or a HHW facility
Batteries	Recycle or bring to a HHW facility

## Aquatic Invasive Species

Biologists estimate that more than 180 aquatic invasive species (AIS) now inhabit the Great Lakes region, causing billions of dollars of economic damage and significant ecological change. Because invasive species are virtually impossible to eliminate, preventing new introductions is essential.

### Remove, Drain, Dry

- ✓ Remove all mud, plants, and animals from boats, propellers, trailers, and accessory equipment whenever boats are launched or retrieved and before leaving the marina.
- ✓ Drain the bilge, live well, and other water containing devices before leaving the marina.
- ✓ Wipe equipment with a towel or let it dry for at least five days before reuse.
- ✓ Clean and dry all equipment surfaces exposed to water.
- ✓ Pay special attention to cleaning and drying boats before moving between water bodies.
- ✓ Take additional steps to decontaminate equipment that has been left in the water for more than a day or has been exposed to a known infested body of water:
  - ◆ Spray hull and other external areas or recreational equipment with high pressure, hot water. Water temperature should be as hot as possible.
  - ◆ Flush motors according to owner's manual with hot water.
  - ◆ Rinse interior compartments with hot water.
- ◆ Use 100 percent vinegar or a 3½ percent salt water solution if hot water is unavailable.

### Other Prevention Practices

- ✓ Become familiar with invasive species in Illinois.
- ✓ Use non-invasive or native species as bait.
- ✓ Do not use fish parts as bait or chum.
- ✓ Dispose of unused bait, worms, and fish parts in proper collection receptacles. Do not throw unused bait into the water.
- ✓ Discard invasive species removed from equipment in trash cans located away from the water to prevent reentry.
- ✓ Report new infestations to the U.S. Fish and Wildlife Service at (877) 786-7267.