

IMPORTANT FACTS TO REMEMBER

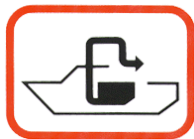
These factoids will help Dockwalkers in providing examples while conducting the face-to-face boater education.

Oil Facts



- One pint of oil can produce a slick of approximately one acre on the surface of the water.⁶
- Films of oil on the surface of water prevent replenishment of dissolved oxygen, block sunlight and impair photosynthetic processes.⁶
- The oil from a single oil change (1 gallon) can ruin a million gallons of drinking water, the supply for 50 people in one year.⁸
- Of the over 1.3 billion gallons of used oils (industrial and lubricating) generated each year in the US, less than 60 percent is recycled.⁶
- In California, over 20 million gallons of used motor oil is disposed each year in an unknown manner by do-it-yourself oil changers. This equates to nearly 1 gallon of Do-It-Yourselfers used oil improperly disposed of for every adult.⁶
- Used motor oil is insoluble, persistent, and can contain toxic chemicals and heavy metals. It's slow to degrade. It sticks to everything from beach sand to bird feathers. Used motor oil is a major source of oil contamination of waterways and can result in pollution of drinking water sources.⁸
- Short term damage: Oil-covered fur or feathers don't insulate marine mammals and diving birds from cold water. When an animal cleans itself, it swallows oil found in the fur or feathers.⁹
- Long term damage: Bottom-dwelling fish exposed to compounds released after oil spills may develop liver disease, reproductive development and growth problems.⁹

Sewage Facts



- Vessel sewage is more concentrated than domestic sewage because less volume of water is used for sanitary purposes on a boat when compared with the amount of water used in landside restrooms. One toilet flush of untreated sewage from a boat can cause the same environmental impacts as 10,000 flushes of a home owner's toilet where the waste is processed by a municipal sewage treatment system.¹⁰

Trash and Marine Debris



- It is now estimated that >8 million metric tons of plastic waste enters our ocean every year from waste mismanagement and littering¹⁵
- 46,000 – Estimated number of floating plastic pieces per square mile (2.6 sq. Km) of ocean.¹³
- The United States recycles just 9 percent of its plastic trash ¹⁶
- Monofilament fishing line, capable of lasting over 600-years in the environment, has been the number one form of wildlife entangling debris found worldwide during the International Coastal Cleanup Event in the past 18-years.¹¹
- Boat collisions with floating and submerged objects in California from 2005-2007 caused 69 accidents, 17 injuries, one fatality and over \$311,000 in property damage.⁴
- Since 1989, when detailed records first began, 7.6 million cigarette butts have been collected during the annual cleanup in California, making up 37 percent of all the trash.³
- In the U.S., 63 pounds of plastic packaging per person goes into landfills every year.¹⁶
- Only 3.5% of plastic is recycled. Reheating plastic gives it a “heat history” which reduces its flexibility. Reheating temperatures are too low to burn off contaminants; therefore, very few plastics are recycled into the same type of containers or products that they were originally.¹
- Plastic doesn’t biodegrade. Plastic goes through a process called photo degradation, where it breaks down by sunlight into smaller and smaller pieces, all of each are still plastic polymers. Even this degradation process can take a very long time. Ex: 500 years for a disposable diaper; 400 years for a plastic six-pack ting and 450 for a plastic bottle.¹
- Broken and degraded plastic pieces outweigh surface zooplankton in the Central North Pacific by 6 to 1.¹
- Nearly a million plastic beverage bottles are sold every minute around the world. In 2015, Americans purchased about 346 bottles per person— 111 billion plastic beverage bottles in all.⁷
- In California, more than 1 billion water bottles end up in the trash every year.⁵
- Over 80% of plastic bottles produced end up in landfills or on our streets, rivers, and oceans. Since 1989, California Coastal Clean Up Day volunteers have picked up over 230,000 of plastic bottles.³
- There are increasing concerns about the health effects of drinking water/liquids being stored in petroleum-based plastics. Research continues on exposure to harmful chemicals from plastics (i. e. Bisphenol A from Plastic #7 and styrene from Plastic #3) leaching into liquids stored in bottles. A high rate of leaching of BPA has been shown from food and beverage containers, leading to widespread human exposure. 95% of people in a recent study conducted by the UC centers of Disease Control had measurable amount of BPA in their urine. The prevalence and levels of PBA in the UC centers for Disease Control study are consistent with blood and tissue levels detected in 100% of pregnant women and their fetuses in Germany and Japan. These findings suggest that humans are continuously exposed to BPA. Thirty one recent publications show significant effects of BPA on vertebrate and invertebrate animals that occurred below the predicted “safe” or reference dose of 50 µg/kg/day. Nonetheless, chemical manufacturers continue to discount these publication

findings, since no industry funded studies have reported significant effects of low doses of BPA, while over 90% of government-funded studies have reported significant effects. Exposure to low doses of BPA has shown affect growth rates and maturation, hormone levels in blood, reproductive organ function, fertility, immune function, enzyme activity, brain structure, brain chemistry and behavior.¹⁴ Tap water is highly regulated and tested for public safety by the EPA - EPA ground & Drinking water www.epa.gov/safewater⁸

- It takes three gallons of water to produce every gallon of bottled water. About 40% of the water sold in containers comes from regular city water supplies.¹²
- Cities and recyclers spend enormous amounts of time and money separating plastic bags from other recyclable materials at recycling facilities; plastic bags jam machinery and add to the manual labor costs of recycling.²
- Plastic is now embedded in the aquatic food chain. It has been found in more than 800 (and counting) species of marine life, from the smallest plants to the largest whales. Notably, plastic has been found in the stomachs of [49 species](#) of commercial fish, many of which are being dished up right now — tuna and salmon as well as mussels, clams, scallops, oysters, shrimp and lobster. Microplastics have been [found even in sea salt](#). What this means for food safety is unclear but it is rapidly becoming an important and active area of research.¹⁷

References

¹ Algalita Marine Research Foundation

² Californians Against Waste

³ California Coastal Commission

⁴ California State Parks Division of Boating & Waterways

⁵ California Division of Conservation

⁶ CalRecycle

⁷ Container Recycling Institute

⁸ Environmental Protection Agency

⁹ Ocean Planet

¹⁰ San Francisco Regional Water Quality Control Board

¹¹ The Ocean Conservancy

¹² The Pacific Institute

¹³ The United Nations

¹⁴ Vom Saal F. S. and Hughes C. *Environ. Health Perspective* 113: 926-933, 2005.

¹⁵ Jambeck et al. 2015. *Plastic waste inputs from land into the ocean*. *Science* 13 Feb 2015: Vol. 347, Issue 6223, pp. 768-771. DOI: 10.1126/science.1260352

¹⁶ ROLAND GEYER, UNIVERSITY OF CALIFORNIA, SANTA BARBARA. <https://www.economist.com/graphic-detail/2018/03/06/only-9-of-the-worlds-plastic-is-recycled#targetText=Daily%20chartOnly%209%25%20of%20the%20world's%20plastic%20is%20recycled&targetText=IN%20A%20paper%20published%20last,recycled%20at%204.9bn%20tonnes>.

¹⁷ San Francisco Chronicle, 2017 <https://www.sfchronicle.com/opinion/openforum/article/California-models-how-to-clean-up-reduce-11203281.php>