



Environment

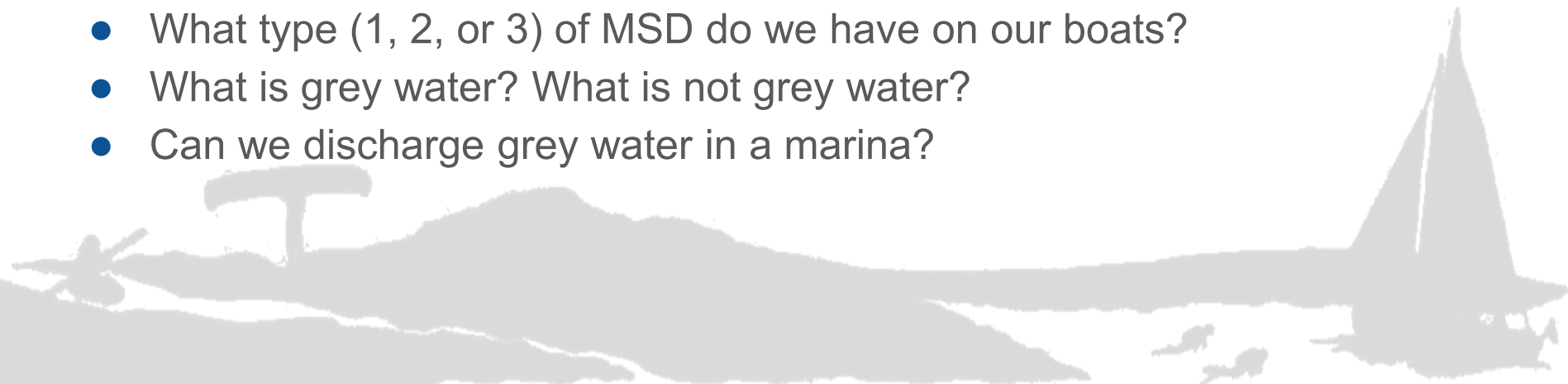
School of the Boat





Pre-Quiz

- Can a vessel discharge oil when over 12 miles from shore?
- What size boat is required to have an Oil Discharge plaque?
- What maintenance could result in discharge of oil?
- How do we prevent pumping oil accidentally when we pump the bilge overboard?
- What are three ways to prevent the spread of nuisance aquatic species?
- How do we dispose of used engine oil, unused paint, and expired flares?
- Can we throw apple cores and orange peels overboard?
- Can a vessel dispose of plastic when over 25 miles from shore?
- What type (1, 2, or 3) of MSD do we have on our boats?
- What is grey water? What is not grey water?
- Can we discharge grey water in a marina?





ORD-12a

- a. Discuss with an adult leader the Federal Water Pollution Control Act as related to oil discharges. **Explain what a “Discharge of Oil Prohibited” placard is and, if applicable, find it aboard your ship's vessels.**





Federal Water Pollution Control Act

- ◆ Master of any vessel or shore facility must report
- ◆ Any discharge of oil that causes a sheen
- ◆ Any waters of the United States

- ◆ USCG at 1800-424-8802 or nearest USCG facility
- ◆ No dispersant to be applied to sheen





Fine\$

- ◆ Criminal negligence or knowing violation
- ◆ \$2500 minimum, and up
- ◆ Responsible for all cleanup costs

- ◆ Think BP!





Discharge of Oil Placard

- ◆ Must have one on every boat 26' and over
- ◆ In machinery space, or at bilge station

DISCHARGE OF OIL PROHIBITED

The Federal Water Pollution Control Act

prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States, or the waters of the contiguous zone, or which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States, if such discharge causes a film or discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of the water. Violators are subject to substantial civil penalties and/or criminal sanctions, including fines and imprisonment.



**Report all discharges to the
National Response Center at 1-800-424-8802
or to your local U.S. Coast Guard office
by phone or VHF radio, Channel 16.**





Where on Your Boats?

- ◆ Where is the placard on your ship's boats?





ORD-12b

- b. Explain what aquatic nuisance species are and how you can help stop their spread.



Aquatic Nuisance Species





DAVE GRANLUND © www.davegranlund.com



Definition

- ◆ Aquatic and terrestrial organisms
- ◆ Introduced into new habitats
- ◆ Produce harmful impacts on aquatic natural resources
- ◆ AND on human use of those resources





Examples

- ◆ Zebra mussels – small bivalves that attach to rock and metal. Clog pipes and attach to boats. Carried by boaters from lake to lake.
- ◆ Eurasian water milfoil – nuisance plant that grows to surface and spreads, blocking sunlight to remaining plants / animals below
- ◆ Nutria – beaver-like animals damage wetland roots and raid crops





Causes

- ◆ Ballast water from commercial ships has been an issue, and must be guarded against
- ◆ Recreational boats moving from lake to lake, carrying Zebra mussels and other organisms
- ◆ People being careless in transporting organisms between bodies of water





Actions

- ◆ Don't allow water from one lake to be transported to another lake
- ◆ Remove visible mud, plants, fish, animals
- ◆ Empty all water from recreational boats, let dry for days
- ◆ Wash boats with pressure washer and hot water
- ◆ Clean & dry gear, clothing, dogs, etc
- ◆ Do not release anything that came out of another body of water





AB-12

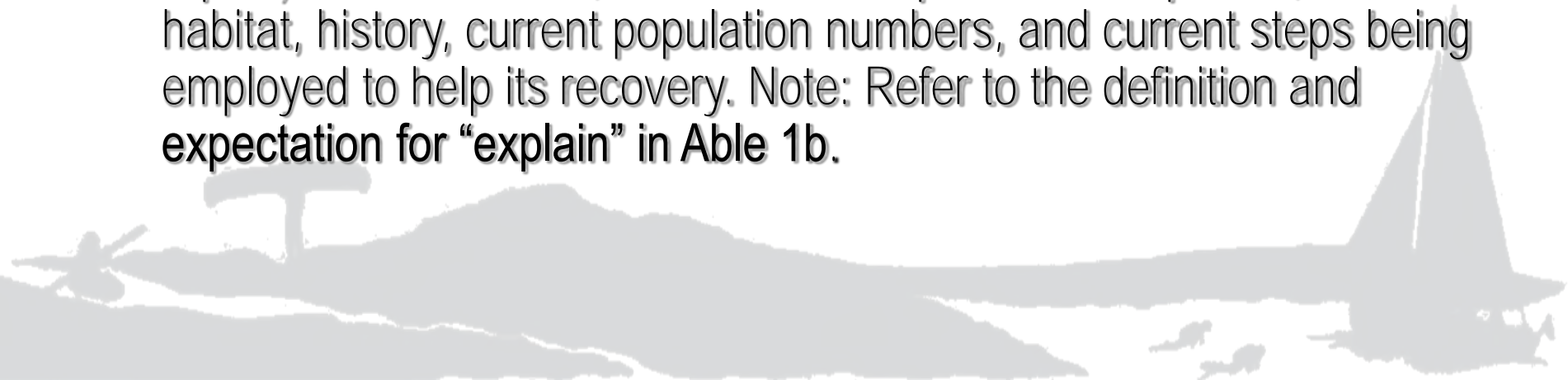
Able Environment





Course Outline

- ◆ a. Demonstrate your knowledge of local environmental laws related to the proper storage, disposal, and cleanup of maritime coating materials, fuels, and other environmentally sensitive materials.
- ◆ b. Discuss with an adult leader the dumping of garbage in the marine environment. Review the contents of the MARPOL placard and locate **it aboard your ship's** vessels,
- ◆ c. Explain the importance of protecting marine endangered species, using a representative species as an example (mammal, bird, fish, or reptile). As a minimum, include a description of the species, its habitat, history, current population numbers, and current steps being employed to help its recovery. Note: Refer to the definition and **expectation for “explain” in Able 1b.**





AB-12a

a. Demonstrate your knowledge of local environmental laws related to the proper storage, disposal, and cleanup of maritime coating materials, fuels, and other environmentally sensitive materials.





Hazardous Material Disposal

WASTE	DISPOSAL OPTIONS
Antifreeze: propylene glycol or ethylene glycol	Recycle: Hire a waste hauler to collect and dispose Confirm your waste hauler will accept mixed antifreeze Purchase on-site recovery unit. Distillation systems are more expensive than filtration, but are more efficient
Waste Oil:	Recycle with a licensed waste management contractor
Quart oil cans	Drain completely and dispose in regular trash. They cannot be recycled
Oil filters	Puncture and completely hot drain for at least 24 hours. Recycle the oil and the metal canister, or double-bag it in plastic and place it in your regular trash
Stale Gasoline	Add stabilizer in winter to prevent gasoline from becoming stale or add octane booster in the spring to rejuvenate. Use the fuel. Mix with fresh fuel and use. Hire a hazardous waste hauler to collect and dispose of it.
Kerosene	Filter and reuse for as long as possible, then recycle
Mineral Spirits	Filter and reuse. DO NOT add to used oil to be burned in heaters
Solvents: paint and engine cleaners such as acetone and methylene chloride	Reuse as long as possible and then recycle. Use less toxic alternatives to avoid disposal issues. Dispose of as hazardous waste. DO NOT add to used oil to be burned in heaters.
Sludge recovered from hazardous solvent	Dispose of as hazardous waste
Sludge recovered from non-hazardous solvent	Let sludge dry in a well-ventilated area, wrap in newspaper, and dispose in garbage
Paints and varnishes: latex, water-based, oil- based	Water based: Allow to dry completely. Dispose of in regular trash. Oil/Solvent based: Dispose of as hazardous waste. Water based and Oil based: Use leftover material for other projects and Encourage tenants to swap unused material
Paint Brushes	Allow to dry completely prior to disposal. Treat as hazardous waste if paint contains heavy metals above regulatory levels.
Rags soaked with hazardous substances	Keep in covered container until ready to discard. Dispose of the solvent that collects in the bottom of the container as hazardous waste. Wring rags out over a waste solvent collection container and have laundered by an industrial laundry. If rags fail TCLP test, dispose of as hazardous waste.
Used oil-absorbent material	If oil and diesel is adequately absorbed, double bag it in plastic and discard in trash (no petroleum can be leaking). If it is saturated with gasoline and is a small amount, allow it to air dry and reuse or double bag and dispose of in trash



Hazardous Material Disposal

WASTE	DISPOSAL OPTIONS
Epoxy and polyester resins	Catalyze and dispose of as a solid waste as long as it dries hard and has no free liquids
Glue and liquid adhesives	Catalyze and dispose of as a solid waste
Containers: paint cans, buckets, spent caulking tubes, aerosol cans	Aerosol cans: if there is residue they are hazardous waste. If they are empty they can be recycled under the scrap metal exemption (if the scrap metal recycler takes them) All other containers: All material that can be removed has been. Containers that held compressed gas are at atmospheric pressure. Containers that held acute hazardous waste have been triple rinsed with the appropriate solvent. Properly dispose of solvent
Residue from sanding, scraping, and blasting	Document that the residue is not hazardous (no metals). Dispose of as a solid waste. If it contains metals, it is a hazardous waste and must be disposed of properly.
Lead Batteries	Recycle or sell to scrap dealers. Store on an impervious surface, under cover. Protect from freezing. Check frequently for leakage. Inform boaters that if they bring their old battery to a dealer, they will receive a partial refund on a new battery.
Expired distress signal flares	Encourage boaters to keep on board as extras. Store in a marked, fire safe container. Use expired flares to demonstrate to boaters how they are used. Notify the Coast Guard and fire department of a demonstration.
Scrap metal	Recycle
Light bulbs: fluorescent, mercury vapor, etc.	Recycle if you have more than a few. Treat as a solid waste if you have less than two and they're mixed with other solid waste. If you segregate from solid waste they need to be dealt with as a hazardous or universal waste.
Refrigerants	Recycle. If you deal with AC, you must be certified and use EPA approved CFC recovery and recycling equipment. Use alternative refrigerants: HCFC-22, HCFC-123, HFH 134A
Monofilament Fishing Line	Recycle through a manufacturer or tackle shop. Dispose in sealed trash can.
Scrap tires	Recycle—legally you can't store tires without a permit- over 500 is Class 6 felony
Pesticides	Dispose of as hazardous waste
Plastic Shrink Wrap	Recycle
Abandoned and derelict vessels	Ensure holding tanks, fuel tanks and bilges are not leaking. Haul out boats that are sinking/have sunk. Contact the owner. Obtain title to the boat before attempting to dispose of vessel



AB-12b

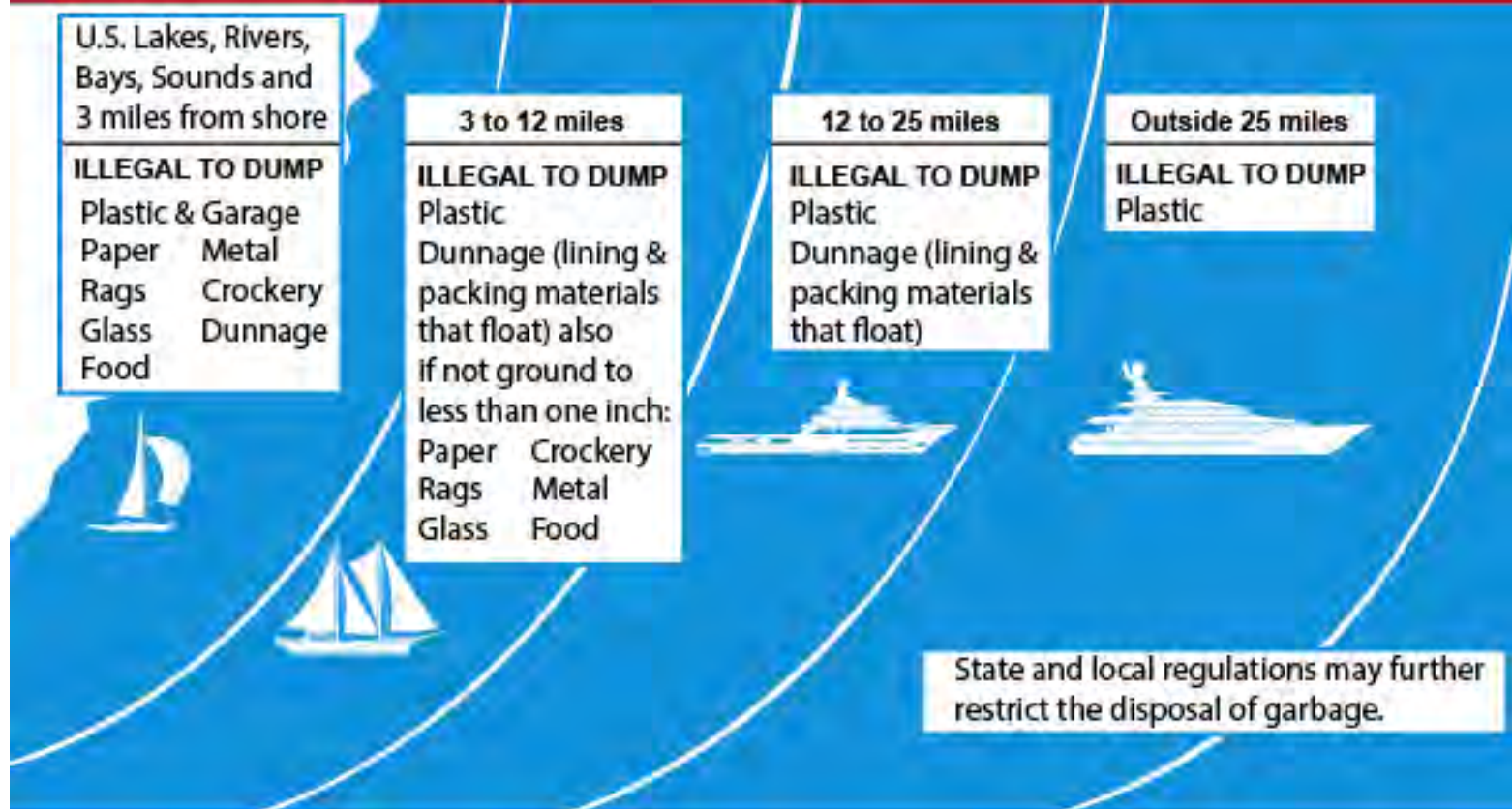
b. Discuss with an adult leader the dumping of garbage in the marine environment. Review the contents of the MARPOL placard and locate it aboard your ship's vessels.





It is illegal for any vessel to dump plastic trash anywhere in the ocean or navigable waters of the United States. Annex V of the MARPOL TREATY is a new International Law for a cleaner,

safer marine environment. Each violation of these requirements may result in civil penalties up to \$25,000, a fine up to \$50,000 and Imprisonment up to 5 years.





What is considered garbage?

- “Under the revised MARPOL Annex V, garbage includes all kinds of food, domestic and operational waste, all plastics, cargo residues, incinerator ashes, cooking oil, fishing gear, and animal carcasses generated during the normal operation of the ship and liable to be disposed of continuously or periodically. Garbage does not include fresh fish and parts thereof generated as a result of fishing activities undertaken during the voyage, or as a result of aquaculture activities.”

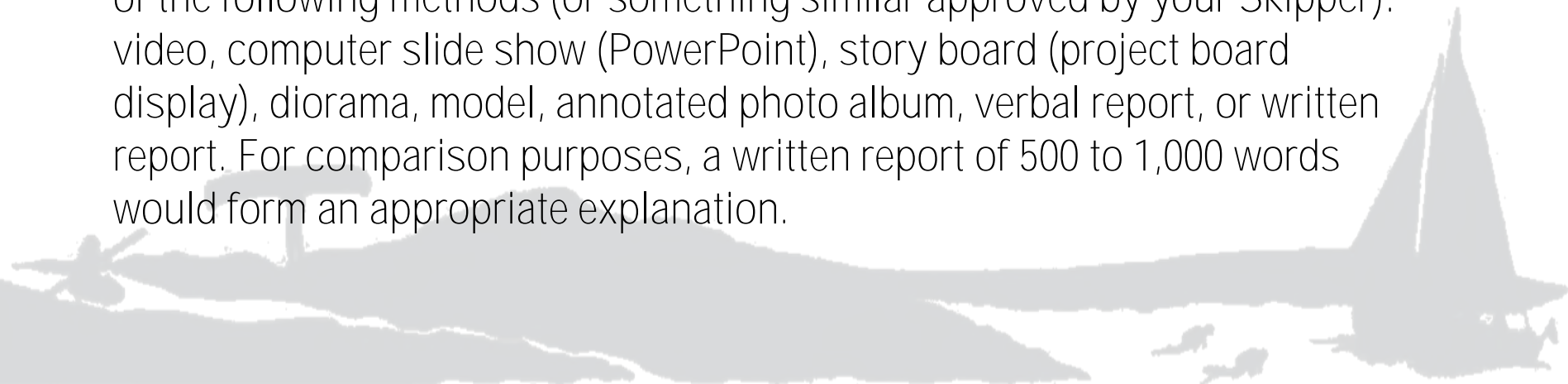




AB-12c

c. Explain the importance of protecting marine endangered species, using a representative species as an example (mammal, bird, fish, or reptile). As a minimum, include a description of the species, its habitat, history, current population numbers, and current steps being employed to help its recovery.

Note: Explain” means to convey information to one or more people using any of the following methods (or something similar approved by your Skipper): video, computer slide show (PowerPoint), story board (project board display), diorama, model, annotated photo album, verbal report, or written report. For comparison purposes, a written report of 500 to 1,000 words would form an appropriate explanation.





QM-12

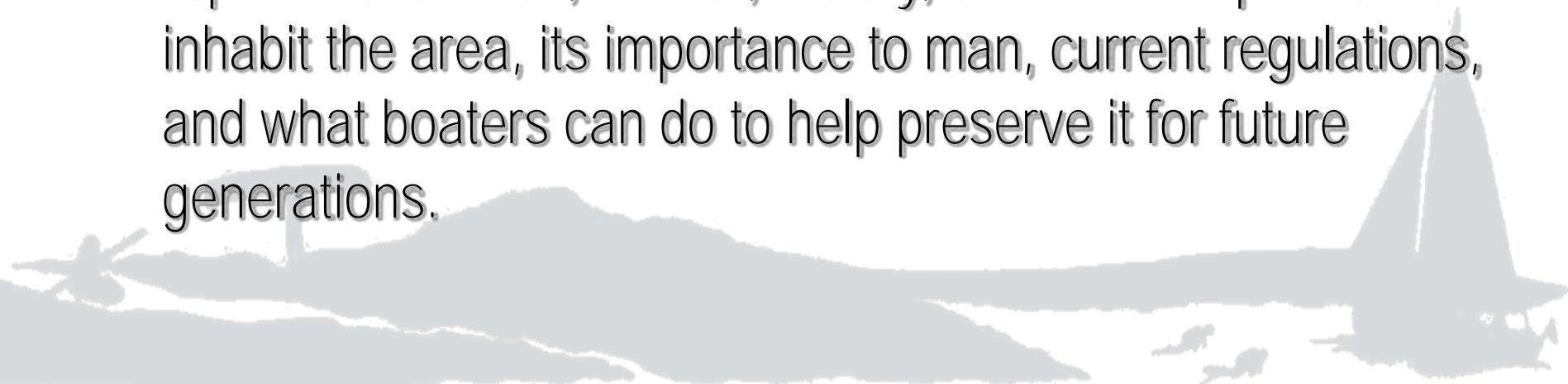
Quartermaster Environment





Course Outline

- ◆ a. Discuss the three types of marine sanitation devices (MSD) and the laws governing sewage discharge.
- ◆ b. Explain what gray water is and how it should be handled in your boating area.
- ◆ c. Write a 500-word report on an aquatic environment (freshwater, coastal, estuary, or sanctuary). Include in the report the location, habitat, history, animals and plants that inhabit the area, its importance to man, current regulations, and what boaters can do to help preserve it for future generations.





QM-12a

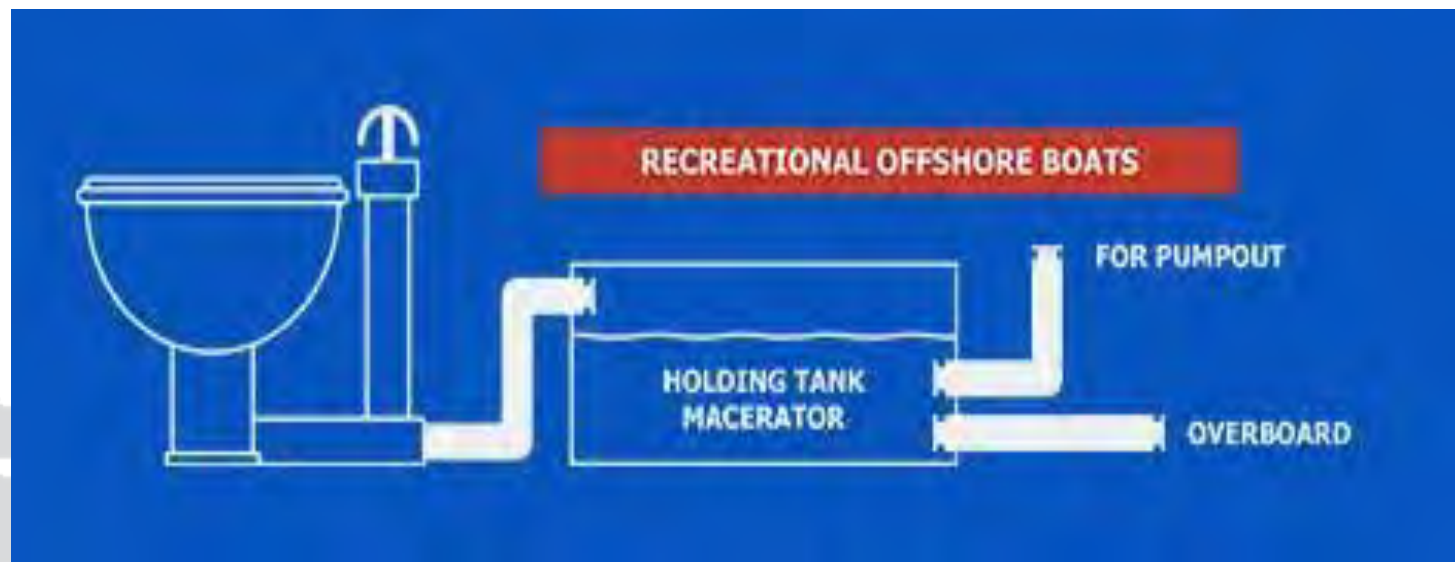
a. Discuss the three types of marine sanitation devices (MSD) and the laws governing sewage discharge.





Type I Marine Sanitation Device

Type I is a flow through discharge device that produces effluent having a fecal coliform bacteria count not greater than 1,000 per 100 milliliters and no visible floating solids. This type of device is typically a physical/chemical based system that relies on maceration and chlorination. Type I MSDs are issued a Certificate of Approval.





Type I MSD

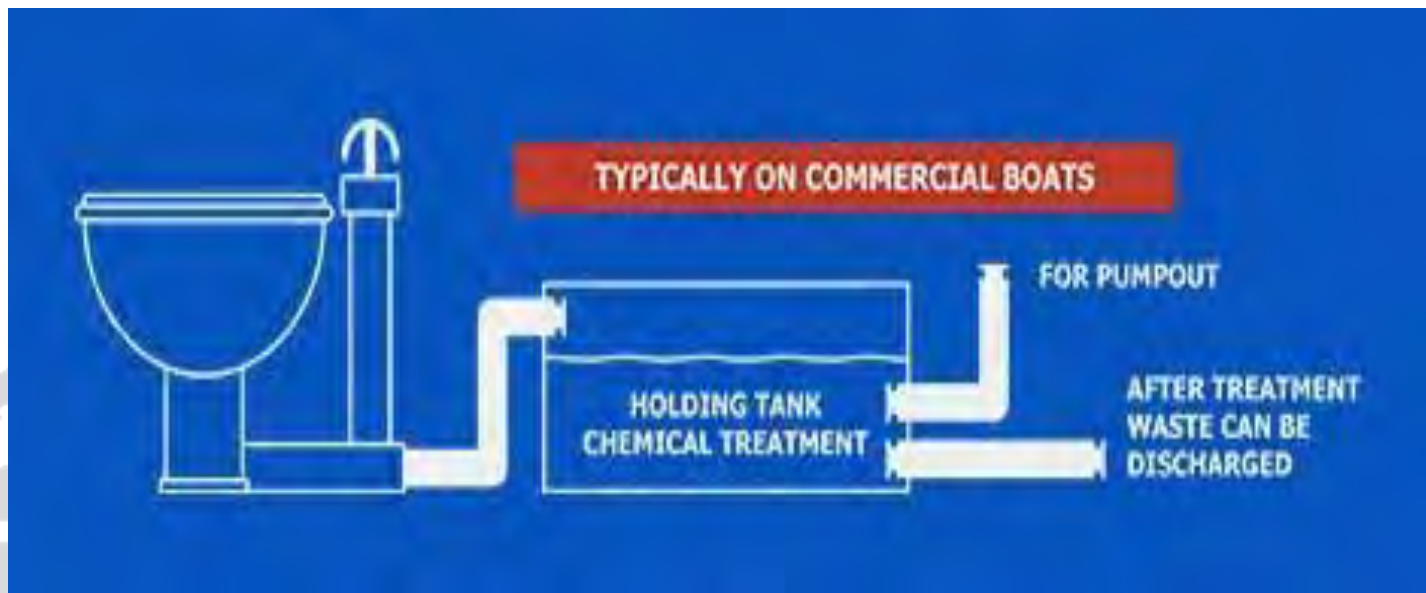
- ◆ Components:
- ◆ Toilet,
- ◆ Macerator (grinder),
- ◆ Holding tank,
- ◆ Electrolytic decontamination (makes chlorine to decontaminate),
- ◆ Pump & Y-valve
- ◆ Needs strong batteries for electrolytic decontamination





Type II MSD

- ◆ Type II is a flow through discharge device that produces effluent having a fecal coliform bacteria count not greater than 200 per 100 milliliters and suspended solids not greater than 150 milligrams per liter. This type of device is typically a biological or aerobic digestion based system.





Type II MSD

- ◆ Components:
- ◆ Toilet,
- ◆ Macerator (grinder),
- ◆ Holding tank,
- ◆ Aeration, biological decontamination,
- ◆ Clarification,
- ◆ Chlorine decontamination,
- ◆ Pump & Y-valve





Type III MSD

- ◆ Type III is a device that prevents the overboard discharge of treated or untreated sewage or any waste derived from sewage. This type of device is typically a holding tank and may include other types of technology including incineration, recirculation, and composting.





The Laws

- ◆ No person may operate any Vessel having an installed toilet facility unless it is equipped with an installed and operable MSD of a type approved by the U.S. Coast Guard to meet the requirements of 33 CFR Part 159.
- ◆ No person may discharge sewage into the navigable waters of the US, including up to three miles offshore





More

- ◆ If you have a porta-potty and use it, you are OK
- ◆ You must empty the porta-potty onshore
- ◆ Most holding tanks are emptied at pump-out stations, but they are getting fewer and pricier in some states
- ◆ If you have a Y-valve, it must be locked closed in US waters





QM-12b

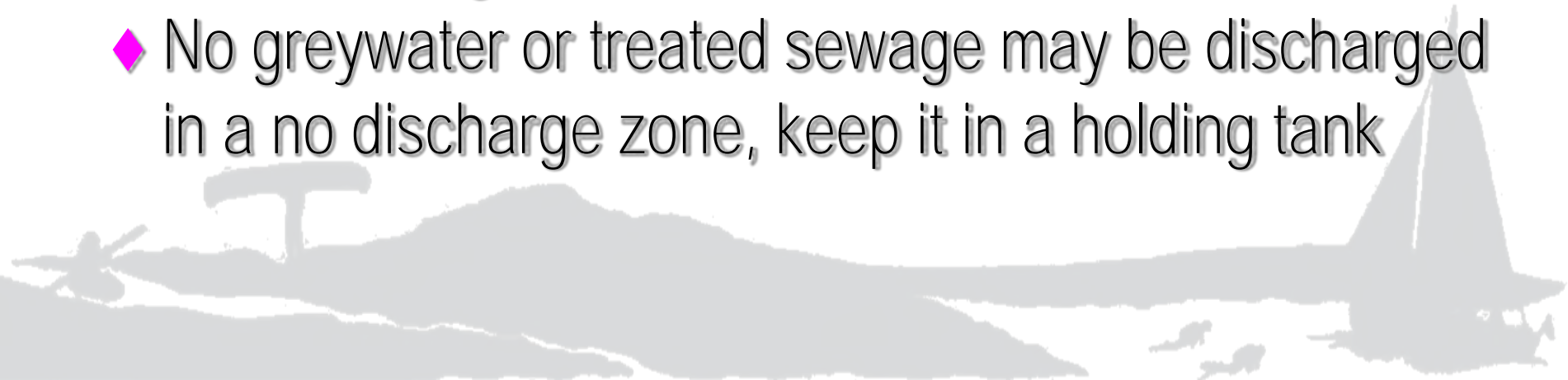
b. Explain what gray water is and how it should be handled in your boating area.





Grey Water

- ◆ Dishwater, shower, laundry, bath, washbasin
- ◆ NOT toilets, urinals, hospital or cargo space
- ◆ In many places, may be discharged overboard without treatment
- ◆ HOWEVER, there are many NO DISCHARGE zones throughout the US
- ◆ No greywater or treated sewage may be discharged in a no discharge zone, keep it in a holding tank





Sample No Discharge Zones

- ◆ Texas – 24 freshwater lakes, Clear Lake
- ◆ New York – Great Lakes, internal lakes and rivers, Long Island Sound
- ◆ California – many small NDZs in southern California, the entire coast for large vessels





QM-12c

- c. Write a 500-word report on an aquatic environment (freshwater, coastal, estuary, or sanctuary). Include in the report the location, habitat, history, animals and plants that inhabit the area, its importance to man, current regulations, and what boaters can do to help preserve it for future generations.





How to Write the Report

- ◆ Pick an area you are familiar with
 - ◆ Lake or bay where you do your boating
- ◆ Research on-line
- ◆ State Parks and Wildlife department
 - ◆ Can help with habitat, history, animals, plants
 - ◆ Regulations that apply





Mechanics of Report

- ◆ Introduction – a paragraph
- ◆ Body – several paragraphs, one topic per paragraph
- ◆ Summary – a paragraph
- ◆ Conclusions / recommendations – a paragraph
- ◆ Footnote or attribute your sources
- ◆ Length – about two pages, double spaced
- ◆ Ought to be more than 501 words!

