Clean Water Notebook

U.S. and International Marine Sanitation Device Requirements

Volume 2

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Marine Sanitation Regulations, Legislative Background

Federal legislation prohibiting the discharge of sewage has been in existence since the Rivers and Harbors Act of 1899. Not until the early 1960's, however, was serious attention given to prohibiting the discharge of untreated sewage into our nation's waterways. Regional health officials had identified a relationship between vessels confined in harbors and estuaries to correspondingly high levels of coliform bacteria.[1] Coliform bacteria are traditionally used as an indicator of human waste, and are uniquely found in the digestive tract of warm-blooded animals.

State and local legislators took steps to control this problem. Two solutions suggested were to temporarily retain waste onboard for later discharge at a shoreside facility, or to treat the effluent to an acceptable level of purity before discharge.

The State of New Hampshire was among the first states to take steps to ensure local water quality. The State specified that flow-through waste processing devices (macerator-chlorinators) be installed aboard all boats used on its inland lakes, specifically Lake Sunape and Lake Winnepesaukee. Specific standards for size of suspended particles and bacterial coliform levels were set (Note: New Hampshire later converted to a no-discharge provision). Additionally, the Lake George Association, working with the New York State Department of Environmental Conservation, established a no-discharge standard for that body of water. Dockside pumps were provided to remove the sewage from the boats to an onshore disposal system.[2] Within a short period of time, other states began adopting either holding tank or treatment requirements. The two methods, however, were mutually exclusive; treatment devices did not have holding capabilities so they could not be used in "no-discharge" areas; and pumpout facilities were generally not available to holding tank users in waters where treatment systems are used. In some cases, vessels equipped with one system could not legally cross from one side of a river to the other shore. Federal controls were requested to establish uniform regulations. The initial response was the Federal Water Pollution Control Act, which directed the Environmental Protection Agency (EPA) to promulgate standards of performance for marine sanitation devices (MSDs). The enforcement of the EPA standards was assigned to the Coast Guard.[3]

For two years the EPA and the Coast Guard studied water quality needs, available hardware, and heard testimony from both treatment proponents and holding system advocates. On June 23, 1972, the EPA promulgated their initial standards. In substance, the EPA's original standard called for zero discharge of wastes treated or untreated with an "incentive" clause to encourage existing vessels in waters not already no-discharge to install treatment devices. Also, Part 140 pre-empted any statute or regulation of a state or political subdivision with respect to the design, manufacturer, or installation or use of any marine sanitation device on any vessel.[4]

Marine Sanitation Regulations,Legislative Background (continued)

Due to continuing requests by commercial and pleasure boating groups, the EPA created a revised set of standards in 1976. The revisions meant treated discharge would be allowed on navigable waters past the 1980 deadline, but higher purity would be required. Michigan and Wisconsin, however, received quick approval on all or some of their "no-discharge" restrictions.[5]

It was up to the Coast Guard to establish test criteria for MSDs. After three years and two sets of proposed regulations, final regulations were published on January 30, 1975.[6] In part, this document covered the testing procedures for the design and construction of MSDs. The details of these regulations are included in the letter in this Notebook. The following points are very significant and should also be noted.

1) The regulations are not applicable to self-contained portable units which are capable of being carried on or off a vessel.[7]
2) Greywater from showers or wash basins is not covered by the regulations (later, greywater from commercial vessels operating on the Great Lakes was added).[8]
3) A marine toilet bowl is not considered part of the device unless it is a part of the container enclosing the MSD or is bolted or otherwise fastened to it.[9]
4) The regulations do not preclude the use of a thru-hull fitting. However, a thru-hull must have a means of preventing discharge of sewage. Consequently, diverter valves (Y-valves) are not precluded by the regulations.[10]
5) Although not part of the original certification regulations, the Coast Guard, later in 1976, allowed any holding tank system which operates at ambient temperature and pressure to be automatically certified and will not have a certification label affixed.[11]
6) In 1978, the Coast Guard in consultation with the EPA waived the higher purity standard due to the lack of devices which would meet this standard, and allowed Type 1 devices which provide a lower level of treatment to be installed past the 1980 deadline.[12]

The original law passed in 1972 has been amended several times, and is now known as the Water Quality Act of 1987 (Public Law 100-4). This Act is up for reauthorization and amendment by the current Congress. Several revisions under consideration at the moment include allowing states to retain revenues from penalties and requiring a technical review of Coast Guard MSD regulations. Tighter regulation of discharge may be forthcoming.

Basic Requirements: Which vessels must comply?

As of January 30, 1980, if a vessel has an installed toilet, it must be equipped with an operable MSD.

Vessels 65 feet in length and under may install a Type I, II or III MSD.

Vessels over 65 feet in length must install a Type II or III MSD[13].

What are the MSD Types and how do they differ?

Type I MSD – This device treats the sewage with disinfectant chemicals or other means and macerates the solids before discharging them into the water. The treated discharge must meet a standard for bacteria count (less than 1000 fecal coliform per 100 ml) and must not produce visible floating solids (basically, solids reduced to less than 1/16th of an inch in diameter).

Type II MSD – This is also a flow-through treatment device, but is required to meet a higher standard of effluent purity. The standard for bacteria is not to exceed 200 fecal coliform bacteria per 100 ml and solids must be reduced to less than 150 mg/l (or parts per million) of suspended solids. The effluent from a Type II device would have the same clarity as slightly cloudy water. o achieve this standard, solids are separated from the waste stream and held for suitable disposal. Generally speaking, Type II devices are only available for larger craft which have sufficient space and power available.

Type III MSD – Type III MSDs are required to a "no-discharge" standard. Type III devices include recirculating and incinerating toilets, and holding tanks. Holding tanks are the most common type of MSD found on pleasure craft. Sewage is stored in holding tanks until it can be pumped to a dockside facility or overboard at sea beyond the territorial waters of the U.S.[14]

See *Clean Water Notebook Vol. 1* for further information on the environmental impact of boat sewage discharge.

What does Coast Guard Certification mean?

Neither Section 312, the EPA standards, nor the Coast Guard regulations require marinas to install pump-out stations. Recent legislation, called the Clean Vessel Act of 1992, does provide Federal funds to pay for up to 75% of the cost of dock-side pumps.

The Coast Guard regulations contain specifications for the design and construction of devices, as well as testing requirements for MSDs. Certification requires the manufacturer of the device to submit one unit for testing to an independent test laboratory which "certifies" that the sample unit passes the required tests. The manufacturer then marks production units of the device with a label which shows a certification number.

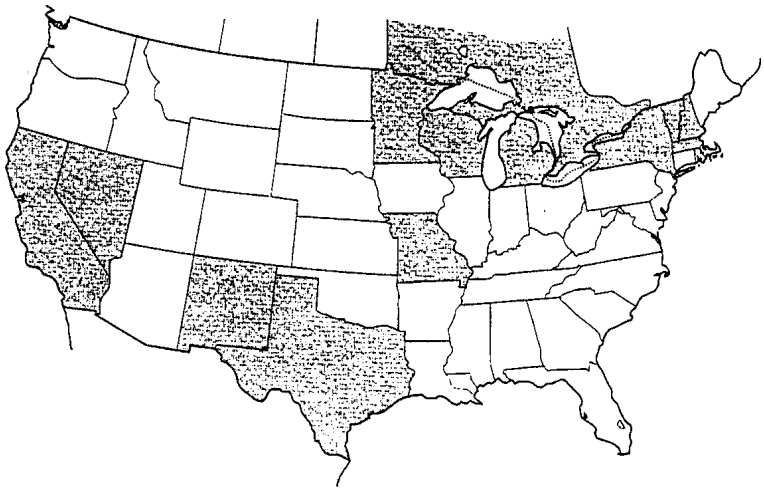
The exception is Type III holding tanks which are considered certified if they store sewage and flushwater only at ambient air temperature and pressure. These units do not have a certification label affixed. However, some holding tank manufacturers claim their products meet Coast Guard Regulations 33 CFR 159. In effect, this only means that their product is designed to hold sewage and flushwater and operate at ambient temperature and pressure.

What waters are no-discharge and what devices are permitted on them?

EPA standards published in 1976 prohibit any discharge on any landlocked freshwater lakes or rivers which are not capable of interstate vessel traffic. The Boundary Waters Canoe Area is also classified as a no-discharge area. All other waters permit treated discharge, except those declared as no-discharge by application of a State to the EPA Administrator.[15]

The following information from an article published in the September 1993 issue of Practical Sailor magazine[14] provides an accurate picture of current no-discharge zones. Currently, there are almost 50 zones in 14 states (see map) that have declared either partial or complete no-discharge zones, according to Jonathan Amson, of EPA's Office of Water.

What waters are no-discharge and what devices are permitted on them? (continued)



New Hampshire – all except coastal waters

Vermont/New York – Lakes Champlain, Memphremagog, George.

Massachusetts – Nantucket Island, Wareham Harbor, Westport Harbor, East and West Branches of Westport River.

Rhode Island – Block Island

Florida – Destin Harbor

Michigan – All

Wisconsin – All but Lake Superior

Minnesota – Mississippi & St. Croix Rivers above Lock and Dam #2

Missouri – All but Mississippi and Missouri Rivers, and Bull Shoals Lake.

New Mexico – All

Texas – 24 Freshwater bodies

California – San Diego Bay, Newport Bay, Mission Bay, Sunset Bay, Dana Point Harbor, Avalon Harbor, Huntington Harbor, Oceanside Harbor, Lake Tahoe (with Nevada), Channel Islands Harbor, and Richardson Bay.

Massachusetts has no-discharge for the waters of Nantucket Island and Wareham Harbor on Cape Cod as well as Westport Harbor, East and West Branches of Westport River. **Rhode Island** is the only other Northeast state with no coastal discharge, for Great Salt Pond on Block Island. (The state hopes to spend $350,000 installing pump-outs over the next five years to expand the zone to include Narraganset Bay, says Joseph Migliore of the State Department of Natural Resources.) Down the coast, the next no-discharge area is found at Destin Harbor in the **Florida** panhandle. In the Great Lakes region, all of **Michigan** is no-discharge, and all of **Wisconsin** except for its portion of Lake Superior. Contrary to popular opinion, the Great Lakes are not totally no-discharge (except on the Ontario side, where Y-valves are illegal), says David White, Great Lakes specialist for the New York Sea Grant. The **New York** portions of Lakes Erie and Ontario are unregulated, as are the **Ohio** waters of Lake Erie and the **Indiana** and **Illinois** waters of Lake Michigan. **Minnesota** has a no-discharge zone above the junction of the St. Croix and Mississippi Rivers*, **Missouri** statewide except the Mississippi and Missouri Rivers, and Bull Shoals lake. **Texas** has extended no-discharge protection to 24 inland lakes, **New Mexico** to all freshwater bodies; Lake Tahoe on the **Nevada/California** border is no-discharge. As might be expected, California leads the way in applying for no-discharge zones, with 11 coastal areas so designated. Amson said some states might be expected to go no-discharge, such as environmentally-conscious **Washington**. Still other states or localities have taken matters into their own hands, such as **North Carolina**, which has a locked-head policy for marina basins.[16]

* Above Lock and Dam #2

Can a boat equipped with a Type I or II device transit a no-discharge area?

Whenever a vessel equipped with a Type I or Type II MSD (discharged treated sewage) is operating in an area of water that has been declared a No-Discharge Zone, the MSD cannot be used and must be secured. Closing the seacock and padlocking, using a non-releasable wire-tie, or removing the seacock handle would be sufficient.[17]

What are the regulations covering discharge at sea?

The following is from the Coast Guard bulletin on MSDs:

> "Discharge of raw sewage from a vessel in U.S. territorial waters (within the three mile limit) is illegal. However, a valve may be installed on any MSD to provide for the direct discharge of raw sewage when the vessel is outside U.S. waters more than three miles from shore. The valve must be secured in the closed position while operating in U.S. waters. Use of a padlock, non-releasable wire-tie, or the removal of the valve handle would be considered adequate securing of the device. The method chosen must be one that presents a physical barrier to the use of the valve."[18]

Note that the three-mile limit is generally defined as a line three miles from the mean low tide line on the coast in direct contact with the open sea and from land point to land point across harbor or bay entrances. All of Chesapeake Bay and Puget Sound are considered inside the three mile limit. (One exception is Monterey Bay, California, where the limits are measured from mean low tide of the bay shore not across the mouth of the harbor.)[19]

What special provisions have been made for "houseboats" or "live-aboards"?

New language was added in the Water Quality Act of 1987 [Section 312 (f) (1) (B)] to deal with the problem of vessels which are used primarily as a residence and not primarily as a means of transportation.[20] States can determine what constitutes a period of continuous residence in order to define houseboats. States do not have to report this action to the Federal government, so each state must be contacted on a state-by-state basis. Once a state determines a vessel is classified as a houseboat, the State can require any kind of device it may deem necessary. In some cases, States have required the installation of a sewage lift station with a submersible effluent pump and automatic controls.

The most recent state to apply for control of onboard sanitation equipment under this provision is Florida.

> Effective October 1, 1994, boaters will be prohibited from discharging sewage into fresh water or within coastal salt water limits. Coastal limits are 9 nautical miles on the Gulf side and 3 on the Atlantic side. The following crafts will be required to have a working toilet on board when in state waters:
>
> - Any Vessel 26 feet or longer with an enclosed cabin and berthing facilities.
> - Any Houseboat is defined as a vessel used primarily as a residence for 21 out of 30 days in a county of this state.
> - Any Floating Structure with an enclosed living space with berthing facilities or work space with public access.

What special provisions have been made for"houseboats" or "live-aboards"? (continued)

Specifications

- No raw sewage may be dumped from any vessel into Florida waters.
- Affected vessels 26 feet or more, except houseboats and floating structures, may use wither a portable or permanent toilet.
- Houseboats and floating structures must, by October 1, 1996, have permanently installed toilets attached to Type III MSDs or connect their toilets directly to shoreside plumbing.

  Houseboats must be equipped with a holding tank capable of being pumped out.
- **On all vessels**, MSDs now in use that are capable either of flushing raw sewage directly overboard or of being pumped into a holding tank, shall set and secure the valve directing all waste to the holding tank. The valve directing the sewage shall be secured with a tie, lock, or strap to prevent discharge within coastal waters.

Enforcement and Penalties

An officer may board a vessel to inspect and MSD:

- When the owner or operator is aboard, with consent, or when there is knowledge or probable cause to believe a violation has occurred or is occurring, or
- When the operator refuses or is unable to display the MSD equipment or when the equipment is permanently installed and not visible unless the officer boards the vessel.

Violations are noncriminal infractions carrying fines of $50 (equipment) and $250 (discharge). If a houseboat or floating structure fails to comply with the Act within 30 days after being cited, the court can order removal of the craft at the owner's expense.[21]

Global Developments on Marine Sanitation Regulations

Canada: (except Ontario)

The Canadian government's approach to marine sanitation differs from that of the U.S. The Canadian Coast Guard regulates commercial vessels (including most commercial fishing vessels). The Provincial governments regulate recreational vessels, and can designate certain waters as requiring no-overboard discharge and enforce those regulations in regard to pleasure craft. So far, three inland lakes in British Columbia (Shuswap, Mona and Okanagan) have been so designated. In addition, the Province of Manitoba is in the process of declaring some of its waters as no-discharge.[22]

Ontario:

The Province of Ontario, which makes up the entire Canadian side of the Great Lakes, has had legislation in place since 1969. Vessels in Ontario must be equipped with a toilet which can only be emptied via a deck fitting. Portable toilets are not permitted. All commercial marinas and yacht clubs in Ontario must provide a dockside pump.[23]

Global Developments on Marine Sanitation Regulations (continued)

Europe: Pleasure Craft

The inland waterways of England and many inland lakes on the Continent, such as the Bodensee, have been no-discharge for many years. Major changes for all of Europe are anticipated before the turn of the century. The European Community (EC) has requested standards for holding tank systems be developed for vessels from 2.5 to 24 meters in length. These standards are currently existing in draft form under International Standards Organization (ISO) standard 8099-1. They are due to be released in final form by early 1995. Parallel with these onboard system standards, work is underway within a working group of the Permanent International Association of Navigation Congresses (PIANC) on technical guidelines for dockside pump facilities. These guidelines are targeted to be completed in Spring 1995. Once these two guideleines are complete, it is likely they will be adopted by those EC countries which are seeking more aggressive environmental regulation.[24]

MARPOL:

Discharges at sea are controlled by the International Maritime Organization (IMO). Prevention of sewage discharge is contained in Annex IV of MARPOL, which is administered by IMO. Obligations under Annex IV are limited to vessels over 200 tons with ten or more people onboard. To be in compliance, vessels can install holding tanks or approved sewage treatment devices which are approximately equivalent to USCG certified Type II MSDs.

New South Wales, Australia.

The Marine Services Board of New South Wales, Australia, declared the waters of Sydney Harbor and the Murray River to be no-discharge for sewage from pleasure craft built after July 1, 1992. These regulations became effective on July 1, 1993.[25]

Glossary and Abbreviations

Discharge: Includes, but is not limited to, any spilling, leaking, pouring, pumping, emitting, emptying or dumping.

Manufacturer: Means any person engaged in manufacturing, assembling, or importing of marine sanitation devices or of vessels subject to the standards and regulations promulgated under Section 312 of the Federal Water Pollution Control Act of 1992, as amended.

Marine Sanitation Device: Any "Device" installed on board a vessel which is designed to receive, retain, treat, or discharge sewage, and any process to treat such sewage.

Sewage: Means human body wastes and the wastes from toilets and other receptacles intended to receive or retain body waste.

Territorial seas: Means the portion of the ocean measured from theline of mean low water along that portion of the coast which is in direct contact with the open sea and extending seaward a distance of three miles.

Vessel: Includes every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on the navigable waters on the United States.

Fecal coliform bacteria: Those organisms associated with the intestine of warm-blooded animals that are commonly used to indicate the presence of fecal material, and the potential presence of such organisms capable of causing human disease.

Type I: A marine sanitation device that, under test conditions, produces an effluent having a fecal coliform bacteria count not greater than 1,000 per 100 milliliters and no visible floating solids.

Type II: A marine sanitation device that, under test conditions, produces an effluent haveing a fecal coliform bacteria count not greater than 200 per 100 milliliters and suspended solids not greater than 150 milligrams per liter.

Type III: A marine sanitation device that is designed to prevent the overboard discharge of treated or untreated sewage or any waste derived from sewage.

Endnotes

1 U.S. Department of Interior, Federal Water Pollution Control Administration (FWPCA), Report to Congress of the United States, 1967, Wastes from Watercraft, (Washington, D.C.: National Archives and Records Service, 1967), 13-14.

2 David Kendall, "Legislation in Marine Sanitation," The Boating Industry Vol.2, (December, 1975), 3-4.

3 Federal Water Pollution Control Act, Pub. L. 92-500; 33 USC 1322 (1970), Section 312.

4 US Environmental Protection Agency (USEPA), Marine Sanitation Device Standard, Vol. 37, No. 122, (Washington D.C.: Office of the Federal Register, National Archives and Record Service, 23 June 1972).

5 USEPA, Marine Sanitation Device Standard, Vol. 41, No. 20, (Washington, D.C.: Office of the Federal Register, National Archives and Record Service, 29 January 1976).

6 U.S. Coast Guard (USCG), Marine Sanitation Device Regulations, Vol. 40, No. 21 (Washington D.C.: Office of the Federal Register, National Archives and Record Service, 30 January 1975).

7 USCG, Marine Sanitation..., found in discussion before regulations, 4622.

8 ibid.

9 ibid.

10 ibid.

11 USCG, Rules and Regulations for Recreational Boating, CG-497, Section 159.12a, (Washington, D.C.: USCG, 1 July 1977), 3a.

12 USCG, Marine Sanitation Devices, Waiver of Certain Requirements for Vessels 65 Feet in Length or Less, CGD 78-059, (Washington, D.C.: USCG, 5 July 1978).

13 Adapted from USCG, Marine Sanitation Devices on Boats, Consumer Fact Sheet #13, (Washington, D.C.: USCG, January, 1986).

14 ibid.

15 USEPA, Part 140-Marine Sanitation Device Standard, 40 CFR Ch. 1, (Washington, D.C.: Office of the Federal Register, National Archives and Records Service, 1 July 1991), 578.

16 "Man Your Pump-Out Stations!," Practical Sailor, (September 1993), 5-7.

17 USCG, Marine Sanitation Devices on Boats.

18 ibid.

19 Jonathon Amson, USEPA, telephone interview by author, 15 February 1994.

20 Water Quality Act, Pub. L. 92-500, 33 USC 1322 (1987), Section 1322, Marine Sanitation Devices, (f) (1) (B).

21 Florida Department of Environmental Protection, Division of Law Enforcement, Florida Marine Patrol, The 1994 Florida Clean Vessel Act: What it Means for Boaters and Marinas, (Tallahassee, Florida: 3900 Commonwealth Blvd. MS. 630).

22 Marion Lightly, "Sewage Bilge Water and Boatyard Wastes," Pacific Yachting, (September 1993), 18.

23 Monogram Industries, Inc., Progress Report, 1972. (Original copy available at SeaLand Technology, Inc., Big Prairie, Ohio), 32, 33

24 Ed McKiernan, "EC Rapidly Moving to Universal No Discharge," Marine/Dock Age, (March/April 1994), 22-23.

25 "Sailing areas adapt sewage discharge controls," Marina Management, (March/April 1994), 20.

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