



Control of Pollution from Pleasure Boats

Author(s): William G. Turney

Source: *Journal (Water Pollution Control Federation)*, Vol. 43, No. 3, Part I (Mar., 1971), pp. 447-453

Published by: Water Environment Federation

Stable URL: <http://www.jstor.org/stable/25036917>

Accessed: 16/05/2010 01:37

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=wef>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Water Environment Federation is collaborating with JSTOR to digitize, preserve and extend access to *Journal (Water Pollution Control Federation)*.

<http://www.jstor.org>

CONTROL OF POLLUTION FROM PLEASURE BOATS

William G. Turney

There is probably no pollution control program undertaken in Michigan that has caused more controversy than that being pursued to control pollution originating from recreational watercraft. History relates that since man began using the world's rivers, lakes, streams, seas, and oceans for navigation, and since populations began occupying adjacent lands, this water has become the depository for all his waste. The rivers carried away his wastewater and litter, and the vast oceans hid them satisfactorily for thousands of years. However, the world's population growth and the expanded use of water for commercial and recreational purposes has brought man to the point where the indiscriminate discharge of untreated waste and debris into the same water used for domestic water supply, bathing, and many other purposes, can be tolerated no longer. Land-base pollution sources long have been the subject of control programs, and during the past 10 yr attention has begun to be directed to watercraft as a pollution source needing similar action.

Michigan Problem

In 1965 it was estimated that there were approximately 30,000 watercraft in Michigan of the size and class nor-

mally expected to have marine toilets aboard. By 1980 this number is expected to climb to about 50,000. Most of these toilet-equipped recreational watercraft are used on the Great Lakes and their connecting waterways with about 12,000 being concentrated in the Detroit metropolitan area. Added to the Michigan fleet are many transients from the other seven Great Lakes states and the province of Ontario. In aggregate they represent a sizable mobile pollution force and constitute a serious threat to the quality of the waters in which they are concentrated because, until the recently established state and provincial control programs, almost all of the sanitary waste generated within these boats was discharged overboard without treatment.

Legislation and Rules

The Michigan Water Resources Commission in 1966 was asked by the governor to develop rules to control pollution from recreational watercraft. The request was very specific in designating only recreational watercraft because at that time federal legislation was pending which would have, if adopted, imposed pollution control restrictions on the commercial fleet; however, these federal laws were not enacted until early in 1970, and it will be from 4 to 7 yr before they are in full force and effect.

In early 1967 the Commission staff was given the job of formulating suggested rules for adoption and implementation. A literature search was conducted on the subject, and numer-

William G. Turney is Assistant Chief Engineer, Water Quality Control Division, Water Resources Commission, Bureau of Water Management, Michigan Department of Natural Resources.

The paper was presented at the Annual Meeting of the Michigan Water Pollution Control Association, Boyne Mountain, June 14-17, 1970.

ous consultations were held with public health and pollution control authorities at local, state, and federal levels as well as with various boating interests. Several drafts of the proposed rules were reviewed, and in October 1967 a public hearing was held during which

comments from the public and all interested parties were heard. After review of the public testimony, the rules were adopted and filed with the Michigan Secretary of State on April 22, 1968. The pollution control aspects of this program are:

(By authority conferred on the Water Resources Commission by Sections 2 and 5 of Act No. 245 of the Public Acts of 1929, as amended, being Sections 323.2 and 323.5 of the Compiled Laws of 1948.)

R 323.501. Definitions.

Rule 501. (1) "Act" means Act No. 245 of the Public Acts of 1929, as amended, being Sections 323.1 to 323.12a of the Compiled Laws of 1948, and the act which these rules implement.

(2) "Commission" means the Water Resources Commission of the Department of Conservation.

(3) "Litter" means bottles, glass, crockery, cans, scrap metal, junk, paper, plastic, garbage, rubbish, or similar refuse discarded as no longer useful or usable.

(4) "Marine toilet" means a toilet on or in a watercraft.

(5) "Nonpollutional" means incapable of causing unlawful pollution as defined in Section 6 of the Act, as amended.

(6) "Sewage" means human body wastes, treated or untreated.

(7) "Watercraft" means a contrivance used or capable of being used for navigation upon water whether or not capable of self-propulsion, except a passenger or cargo-carrying vessel including those subject to the Interstate Quarantine Regulations of the United States Public Health Service adopted pursuant to Sections 241, 243, 252, and 262 to 272 of Title 42 of the United States Code.

R 323.502. Sewage; use of pollution control devices and disposal facilities.

Rule 502. (1) No person shall operate a marine toilet on a watercraft on the waters of this state [Michigan] so as to discharge sewage into such waters unless the sewage has been rendered nonpollutional by passage through a device approved by the commission.

(2) No person owning or operating a watercraft having a marine toilet shall use or permit the use of such toilet on the waters of this state unless the toilet is equipped with one of the following pollution control devices:

(a) A holding tank which will retain all sewage produced on the watercraft.

(b) An incinerating device which will reduce to ash all sewage produced on the watercraft. A device determined by the Commission to be capable of rendering sewage discharges nonpollutional in accordance with the requirements of the Act.

(c) (Eliminated by Water Resources Commission Resolution, July 1969)

(3) No person shall dispose of sewage accumulated in a holding tank or any other container on a watercraft in such manner that the sewage reaches or may reach the waters of this state except through a sewage disposal facility approved by the state Department of Public Health or its designated representative.

R 323.503. Watercraft registration; marine toilet information.

Rule 503. An applicant for a certificate of number for a watercraft pursuant to Section 33 of Act No. 303 of the Public Acts of 1967, being Section 281.1033 of the Compiled Laws of 1948, shall disclose at such time to the Commission whether the watercraft has in or on it a marine toilet, and if so, whether the toilet is equipped

with a pollution control device as required by these rules. The commission may request the secretary of state to provide it with the name of an applicant whose application indicates the absence of such pollution control device on a marine toilet.

R 323.504. Litter disposal.

Rule 504. Disposal of litter is subject to the provisions of Act No. 106 of the Public Acts of 1963, as amended, being Sections 752.901 to 752.906 of the Compiled Laws of 1948.

R 323.509. Effective date.

Rule 509. These rules are effective January 1, 1970.

During the discussion of the proposed rules, there was one basic underlying thought and that was to prohibit overboard discharge of all human waste. The Commission was, and is, firmly convinced that if there is to be a meaningful control program, the only approach that could be pursued effectively is one that would require the retention of wastes on board for subsequent pump-out at an approved on-shore waste collection and treatment facility. Paragraph 2 (c) of the rule was adopted only to leave room for some future heretofore unknown waste treatment facility that could effectively control wastes originating on board watercraft.

During 1968 there was widespread distribution of the rules and the Commission's intention of approving only retention systems. This took the form of letters, brochures, and posters that were hand-delivered to most marinas throughout the state. The informational literature specifically stated that the Commission would not approve the macerator-chlorinator, flow-through treatment devices. Boaters reading Paragraph 2 (c) of the rules insisted that macerator-chlorinators were effective pollution control devices capable of rendering the wastewater discharges nonpollutional. In an effort to clarify its position on this matter, the Commission adopted a resolution on April 22, 1969, stating:

BE IT RESOLVED that the Water Resources Commission hereby states for public information that it does not believe that flow-through units on board recreational watercraft can be relied upon to render sewage nonpollutional, and to clarify its position on this matter, it is the stated intention of the Commission to change Rule 323.502 by eliminating Paragraph 2 c.

Public Reaction

After distribution of the informational material outlining the Commission's program, there began what certain boaters have described as a ground swell of public opinion against the rules that culminated in a lawsuit brought against the Commission in Wayne County Circuit Court in early 1970. During this time the Commission remained convinced that opposition to the retention concept in Michigan and other states is not representative of the majority of boaters but is, in effect, the very dedicated efforts of a small but highly organized group of boaters who, along with certain manufacturers, want recognition and approval of the so-called macerator-chlorinator treatment devices.

Macerator-chlorinator units have been on the market for at least 20 yr. They grind or macerate the wastewater solids to small particle size, and a disinfectant, usually chlorine, is added to the waste before overboard discharge. Theoretically, and on a laboratory bench, these units can be effectively operated to kill most or all of the pathogenic microorganisms as measured

by the total and fecal coliform tests. In actual practice, however, it is a different story. The use of mechanical equipment uniformly follows Murphy's law, that is, if something can malfunction, it will, and it will do so at the most inopportune time, in this case, while the boat is temporarily moored in critical recreational waters or while passing over a potable water intake. The experience of the Commission and the Michigan Department of Public Health with all types of mechanical wastewater treatment facilities, most of which are operated under the supervision of skilled operators, convinced them that a waste treatment facility installed in the bilge of a small watercraft with anticipated casual maintenance could not be relied on to prevent bacterial pollution, to say nothing of the fact that there would be only minimal reduction of solids, nutrients, and biochemical oxygen demand (BOD).

Certain boating interests felt differently about this, and a rather extensive campaign of letter writing, legislative lobbying, and activities bordering on harassment of pollution control officials has taken place during the past 2 yr. Arguments used against the holding tank and, in effect, for the flow-through systems are enumerated below and shown in italics. The Commission's response follows each argumentative point.

1. *Boats are only a fraction of a percent of the total pollution problem, and the total elimination of even treated wastes is not called for.* Of course, one can always find a bigger polluter, but the cleanup of water must be a total effort aimed at all sources of pollution, and it is the Commission's belief that recreational watercraft are a significant source.

2. *Boaters are being discriminated against because they are being told they cannot treat and discharge their wastes while industries and municipal-*

ities are allowed to do so. Boaters have failed to realize that part of any industrial order or municipal construction permit includes regulation of the point of discharge and often the time or season when discharges may occur. Such discharges are not allowed in the vicinity of a municipal water intake or a swimming beach even though the waste may be very highly treated. If boats could discharge waste effluent, it is likely that the discharges would occur in such locations.

3. *There are no pump-out facilities to service holding tanks even if boaters do put them in.* This argument was used often by the very boaters that were telling their marina operators not to put in pump-out stations because they were going to get the rules changed. In spite of this, there are now over 75 pump-out stations in service along the Michigan Great Lakes shoreline and their number is growing monthly. Some 36 stations have been or are being constructed or partially financed by the Waterways Commission at municipally owned marinas. In addition, this criticism is not totally valid because Michigan approves the so-called portable self-contained toilets where wastes are collected in a detachable suitcase-like plastic tank that can be carried ashore and emptied into any toilet system.

4. *Holding tanks will impose a severe financial burden on boaters.* The price of clean water is never cheap but the cost of retention systems is comparable to that of macerator-chlorinator systems and in many cases are much less expensive. Prices of holding tank or recirculating toilet units range from about \$35 to \$300.

5. *Marinas will charge boaters fees for pump-out service that will force them to give up boating.* By actual survey the average pump-out fee in Michigan is about \$2.50 and ranges from \$0.50 to \$7. The average boater will require a pump-out about once

every 2 wk, and the boating season in this area of the country is about 12 to 14 wk out of the year. Using the highest charge for pump-out service, this would mean an annual cost of about \$49 which most people would agree is not going to force many boaters off the water.

6. *Holding tanks will give off odors, create hazardous explosive conditions, and will constitute a public health threat to the occupants of the boat.* There are over 250,000 holding tank and recirculating toilets in use at the present time throughout North America with no indication that there is a valid basis for concern on any of these points. Most systems employ chemicals to retard bacterial decomposition and to control odors. For the most part, these chemical agents do a very effective job.

These points, and many others, were raised by the Boaters for Clean Water when that association of some 3 dozen boaters filed suit charging that the Water Resources Commission acted arbitrarily and capriciously by allowing only retention systems for the control of pollution from recreational watercraft. Specifically, it asked the Court to require the Commission to establish "reasonable" standards for overboard discharge of treated wastes. Six days of testimony were heard by the Wayne County Circuit Court wherein both sides presented expert witnesses from across the country. On April 22, Earth Day, 1970, the Court rendered its judgment, which upheld the action of the Commission, finding that its program was a proper one.

Other States

Michigan is not alone in its adoption of the total retention concept for watercraft pollution control. Similar regulations or legislation has been adopted in the states of Wisconsin, Illinois, Indiana, New York, the port of Chicago, the province of Ontario,

and by the St. Lawrence Seaway Authority. In addition, the total retention concept has been endorsed by the Federal Water Quality Administration, the International Joint Commission of the United States and Canada, and by the conferees to the joint federal-state enforcement conferences regarding the pollution in lakes Erie, Michigan, and Superior. These pollution control agencies and officials have weighed carefully all alternative approaches to this problem, and it is their joint considered opinion that the acceptance of incinerators or retention systems only is the best approach to solving this problem.

Future Action

At the present time legislation is under consideration by the Michigan Legislature that would have an effect on the Commission's boat pollution control program. A bill that has passed the state House and is before the Senate would expand the Commission's program to include commercial vessels and would also require marinas operating on the bottom lands of the Great Lakes and inland lakes of the state under permit or lease from the Department of Natural Resources to provide pump-out facilities. The Water Resources Commission would continue to be the agency that administers this program and, if passed by the Senate in its present form, the bill would do much to strengthen the Commission's policy of no overboard discharge.

The Federal Water Quality Improvement Act of 1970, PL 91-224, also deals in large part with watercraft pollution control. This federal legislation will preempt all state watercraft pollution control laws and regulations unless the Secretary of the Interior, on application from individual states, provides exception from the preemption clause. According to the law this may only be done for certain critical

waters such as those used for domestic water supply or swimming. This law provides that the Secretary of the Interior, in cooperation with the Secretary of the Department of Transportation, the department in which the Coast Guard operates, will have 2 yr to develop standards and requirements for watercraft pollution control systems. The effective date of this legislation will be 2 yr after promulgation of the standards for new watercraft and 5 yr after promulgation for existing watercraft. This means that it could be up to 7 yr before any pollution control system would be required for existing watercraft, and the law provides that states may continue to enforce their own laws or regulations until the effective date of the federal standards.

Federal authorities have indicated that the macerator-chlorinator, or any other such flow-through treatment device, will not be approved under any regulations or standards that might be promulgated by the Secretary of the Interior. There is, however, considerable lobbying on the part of certain boating interests seeking to have effluent standards approved that would allow for such devices. Only time will tell what effect these efforts will have on the Secretary's decision. (Editor's Note: Federal positions may be altered, too, in view of the new Environmental Protection Agency.)

Until such time as the states may be preempted by federal regulation, the Water Resources Commission intends to continue to implement and enforce the rules as they exist because it is believed that the total retention concept is the only practical approach in controlling pollution from watercraft.

To further this program communities located on the Great Lakes or major waterways are urged to install pump-out facilities at their municipal marinas and to encourage the installation of such facilities at all private

marinas serving recreational watercraft. The Michigan Department of Public Health has formulated guidelines for marina sanitation and control of watercraft pollution which outline the facilities that should be provided for transient and nontransient watercraft in various sized marinas. These guidelines indicate that pump-out facilities, wherever possible, should be connected to existing public wastewater collection and treatment systems and that such connections can either be made by means of a gravity sewer or force main. As a second choice for disposal, an onshore or dock-side holding tank for receiving liquid waste from the watercraft holding tank or recirculating toilet units should be provided and dewatered by a licensed septic tank cleaner whenever necessary.

Conclusion

One point should be recognized by communities accepting marina pump-out facility wastes. These wastes, in most cases, will contain chemicals used for odor and bacterial growth control. The most common material being used today is zinc sulfate, although other compounds include formaldehyde, quaternary ammonium compounds, and phenolic disinfectants. In all but the very small communities, these materials would be diluted to the point of insignificance by the municipal waste. In the smaller communities it may be necessary to install pretreatment devices at or near the marina site to neutralize the effects of some of the various chemical compounds.

The effectiveness of the total retention program hinges on an adequate number of pump-out facilities. As pointed out, there are now approximately 75 on the Great Lakes shoreline, but there must be perhaps three times that number to serve the recreational fleet adequately.

To illustrate this point, the following is paraphrased from a column that ap-

peared in the *Clinton Meneely* of Troy,
N. Y.:

The Plight of the Modern Mariner

Tw'as summer, Nineteen Seventy.
Assisted by the bank,
Our ship complied with Michigan's rules
And got a holding tank.

Vacation time came in July
We scraped and caulked the hull.
And loaded up our duffle—but
The holding tank was full.

"Oh deck boy can you pump us out?
Our tank is full, we fear."
"You're welcome to our rest rooms
But we cannot pump you here.

We're waiting for our pumps to come;
But for your consolation,
Just ten miles south, the State has built
A brand new pumping station.

So start your cruise without a qualm.
They're there to help you out."
And off we went with minds at ease
A short delay, no doubt.

"Oh station tender, can you help?"
"Yes! Come in August—late.
I've got two thousand boats to serve;
You're nineteen forty-eight."

We took our chances and went on
With stops at every pier.
We came to dread that fearsome cry;
"You cannot pump out here!"

Vacation's end was drawing near.
Our hearts were growing faint.
Oh Water! Water! everywhere
And not a drop to taint.

Now falling leaves pollute the bay,
And hot drinks fill the cup;
But joy is in our ship again.
Our number just came up.