National Marine Manufacturers Association

August 1, 2008

By Electronic Submission

Deborah Nagle
Industrial Branch Chief
Water Permits Division
c/o Water Docket
United States Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460

Re: Draft National Pollutant Discharge Elimination System (NPDES) General Permits for Discharges Incidental to the Normal Operation of a Vessel
Docket ID Nos. EPA-HQ-OW-2008-0055 and EPA-HQ-OW-2008-0056

Dear Ms. Nagle:

I write on behalf of the National Marine Manufacturers Association (NMMA) in response to your request for additional information concerning marine engine cooling water and wet exhaust. By separate letter also submitted today, NMMA has provided comments on the Environmental Protection Agency's (EPA's) proposed Clean Water Act General Permit for Discharges Associated with Recreational Vessels (RGP) and proposed Vessel General Permit for Discharges Incidental to the Normal Operation of Commercial Vessels and Large Recreational Vessels (VGP). *See* 73 Fed. Reg. 34296 (June 17, 2008).

NMMA is the leading national recreational marine trade association, with nearly 1,700 members involved in every aspect of the boating industry. NMMA members manufacture over 80 percent of recreational boats, engines, trailers, accessories and gear used by boaters and anglers in the United States.

As explained in NMMA's separately-submitted comments, incidental discharges from recreational vessels are exempt from the Clean Water Act permit requirement under the Clean Boating Act of 2008, which was passed by Congress on July 22, 2008, and signed into law by the President on July 29, 2008. Pub. L. No. 110-288; 122 Stat. 2650 (2008). Accordingly, the recreational vessels manufactured by NMMA members should be removed from EPA's proposed permits. Nonetheless, I provide this separate response providing technical information concerning marine engine cooling water and wet exhaust and in order to be responsive to your request. Please let me know if you have any questions or would like additional information concerning these subjects.

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I. MARINE ENGINE COOLING WATER

Modern marine engines are frequently cooled with raw water, either salt or fresh, drawn from ambient surface water. The process starts by drawing water into the engine through the outdrive or in the case of inboards through a seacock and pumping it through the engine's water jacket and ports by way of a mechanical water pump. The water flows through the engine and directly out the exhaust. This cooler water absorbs heat from the engine to help keep it cool.

Some marine engines use an enclosed cooling system. This means that there is a small tank on the top of the engine that uses a combination of fresh water and coolant. This fresh water is circulated through the engine and through a heat exchanger. The fresh water in this system is enclosed, and absorbs the heat of the engine. Raw water is still drawn up through the outdrive or seacock but only flows through the heat exchanger jacket. This cooler raw water absorbs the heat from the fresh water through the heat exchanger jacket and is then pumped out with the exhaust.

Regardless of the engine cooling system used, recreational and other marine engine exhaust is generally discharged with cooling water to reduce noise and prevent the occupants of the boat from coming into contact with a hot exhaust pipe.

The U.S. Coast Guard regulates the engine exhaust cooling standards in 46 CFR § 182.425 and the engine exhaust pipe installation standards in 46 CFR § 182.430 (both relating to small passenger vessels under 100 gross tons). *See also,* 46 C.F.R. § 58.10-5(c) (Internal Combustion Engine Installation). The average exhaust temperature that manufacturers calibrate to, at the engines' combustion chamber discharge point, is 900°F at idle to 1500 °F at wide open throttle. At the water exhaust mixing zone the exhaust temperature drops immediately to 200 °F. By the time the exhaust / water reaches the discharge point the water temperature is approximately 50°- 75 °F. The modern recreational marine mixed cooling system enables the boat builder to comply with the U.S. Coast Guard safety regulations and eliminates the risk of injury from exhaust burns by not having a hot exhaust pipe passing through center of the vessel.

II. MARINE ENGINE WET EXHAUST

In addition to raw water, another marine engine discharge incidental to the normal operation of a vessel is wet engine exhaust. Since the passage of the Clean Air Act Amendments of 1990 there has been a technology revolution in the marine engine sector. The conventional carbureted two stroke outboard spark-ignition engine is being phased out and replaced with high pressure direct injection two stroke and four stroke engines. EPA is expected to finalize a regulation this year that will impose new engine emission standards for marine outboard spark-ignition engines, that will effectively remove new carbureted two stroke marine engines from sale in the U.S. commencing in 2010. *See* "Control of Emissions from Nonroad Spark-Ignition Engines and Equipment; Proposed Rule," 72 Fed. Reg. 28098, 28128-39 (May 18, 2007). In light of these developments, the language in the proposed VGP in which EPA "encourages vessel operators to consider four stroke versus two stroke engines," and states that "[u]se of a four stroke engine may minimize the discharge of pollutants to US waters," is unnecessary and ill-advised. *See*, *e.g.*, VGP at 25, § 2.2.22.

Stern drive and inboard (SD/I) spark-ignition engines are also being regulated by EPA, which we expect to impose emission standards that will require catalyst technology and onboard emission diagnostic systems starting in 2010. *See* 72 Fed. Reg. at 28104. SD/I engines are typically four stroke automotive engines that have been "marinized" for operation in a boat. *Id.* at 28113. By adding catalyst exhaust emissions these engines will be identified by the California Air Resources Board star label program as Four Star "Super Ultra Low Emissions" engines.

With all this innovation it is still difficult to quantify the impact that new technology engines and boat fuel systems[1] will have on water quality, because marine exhaust emissions are, at least in large part, released to the air (and regulated by EPA under the Clean Air Act). We do know that these engines emit significantly less air emissions, and any water emissions are not likely to be significant. Even with respect to currently-used technologies, there have been hundreds of studies that have examined the affect of marine engines on water quality subjected to high boat traffic. These are just three examples:

- Keuka Lake Water Quality Testing Program (2000). The results showed that "Even in the most crowded boating areas during the holiday weekends, non-detectable levels of hydrocarbons were found."

- Water Test: Donner Lake California (1999). The tests were conducted on July 6th, after the July 4th weekend, traditionally the busiest boating weekend of the year. The test showed no trace fuel components.

- In extensive water studies conducted around Oregon, a State known for clean watersheds with average levels of boating use (26th in nation in boat registrations), has never shown any degraded water or air as a result of outboard use.

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[1] The impacts on the proposed general permits of innovation and EPA regulation under the Clean Air Act is not limited to marine engines. EPA is expected to finalize a regulation this year that when implemented will require evaporative emission controls for boat fuel systems. *See* 72 Fed. Reg. at 28165-193. These requirements will include low permeation fuel lines, fuel tanks and controls to reduce diurnal emissions through the vent of the boat's fuel tank. *Id.* at 28173-74. Currently, it appears that the technology likely to be used to meet these requirements is a passive purge system that would require the installation of a carbon canister in line with the vent. In order for the carbon to work effectively, boat builders will need to redesign the boat's fuel system to prevent fuel from entering the canister and spitting back through the fill tube. EPA, the USCG and the Small Business Administration have been working on this issue and funding will be provided for the American Boat and Yacht Council to develop installation standards. The USCG will then work with EPA to evaluate these standards to reduce diurnal emissions, address fuel spit back and insure the continued safety of the boat's fuel system.

There have also been studies where old technology carbureted two stroke outboard engines have been operated in a 55-gallon drum or similar size test tank and in this confined environment water samples indicated elevated levels of exhaust gas constituents. These tests were not representative of the operation of a vessel in the environment that it was designed for.

Considering the significant progress that has been made and will continue to be made since the passage of the Clean Air Act Amendments of 1990, it is clear that the best strategy to continue to drive improvement in marine engine technology and reduce emissions to the environment is through the current EPA regulatory process. NMMA is committed to continuing to work with EPA and the U.S. Coast Guard, Office of Boating Safety, to evaluate available technology, and ensure that it is safe and installed in a safe manner.

NMMA appreciates the opportunity to provide these comments to EPA and welcomes the opportunity to discuss these comments in future detail. Please contact me at 202-737-9766; csquires@nmma.org for any additional information or if you have any questions on this material.

Respectfully submitted,

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