January 7, 2003

Air and Radiation Docket & Information Center (6102T)
Attention: Docket No. A2000-02
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Re: Docket No. A-2000-02; Notice or Proposed Rulemaking for the Control of Emissions from Spark-Ignition Marine Vessels and Highway Motorcycles; 40 C.F.R. Parts 86,90,1045,1051 and 1068

Dear Sir or Madam:

The following comments are being offered by the National Marine Manufacturers Association (NMMA) in response to the Notice of Proposed Rulemaking for the Control of Emissions from Spark-Ignition Marine Vessels and Highway Motorcycles, published in the *Federal Register* on Wednesday, August 14, 2002 (67 Fed. Reg. 53050). The NMMA is only concerned with the sections of the proposal that address EPA plans to regulate emissions from marine vessels.

NMMA also notes that the proposed regulations for marine vessels affect three segments of the industry -- sometimes differently. These are: 1) boats with integrated tanks; 2) boats with portable tanks; and 3) personal watercraft. NMMA, therefore, has included general comments that affect the entire industry, and also specific comments regarding the individual segments. The Personal Watercraft Industry Association (PWIA) will be submitting separate comments identifying PWC specific issues, where appropriate. The NMMA supports the comments of the PWIA.

NMMA first became involved in this rulemaking in December 2000, when EPA published an Advanced Notice of Proposed Rulemaking in the Federal Register.[1] Following the notice, in February 2001, EPA met in Miami with the newly formed NMMA Evaporative Emission Task Force. At this meeting, NMMA took the opportunity to begin raising some of the safety and technical concerns our members had with EPA's ANPRM, which among other things, included plans to require the pressurization of fuel tanks to control diurnal emissions. NMMA met with EPA in Ann Arbor, Michigan in August 2001, where, in a formal presentation, EPA detailed its plans for the proposal. Following the August 2001 meeting, the NMMA evaporative emission task force began studying the EPA proposals and collecting data on the impact that this

[1] 65 Fed. Reg. 76797, Dec. 7, 2000.

rule would have on fuel systems and our member companies. As an industry, we continued a dialogue with EPA regarding our concerns. In February 2002, EPA and industry again met in Miami, where personnel from EPA's Ann Arbor office presented a draft revised approach to regulating evaporative emissions from boat fuel systems. This common sense approach included the option of applying controls to two of three possible emission sources. The three possible emission sources are diurnal (vent control/pressurization), permeation (sulfonation, fluorination, alternate materials), and fuel hoses (numerical standard).

Many of the small business NMMA members are extremely concerned that this rule, as proposed, sets requirements that far exceed their resources and capabilities. With that said, NMMA was encouraged by the EPA proposal outlined at the Miami meeting and felt that it was a positive step in developing a feasible rule. What concerns NMMA members and actually confuses them is that this proposed rule does not reflect the latest EPA / NMMA discussions. Rather, it reflects the initial thoughts and discussions from February 2001 when both EPA and NMMA had yet to seriously evaluate the impact that this rule would have on the marine industry.

NMMA strongly believes that the current proposal places excessive reliance on programs that are not well suited to the small businesses that manufacture marine tanks, fuel hoses and boats. The proposal relies on programs that may work well for the automotive industry, but create excessive burdens for these small businesses. NMMA's comments will provide background information on the portions of the marine industry that would be affected by this proposal, and will outline NMMA's suggestions as to how to attain significant environmental benefits while minimizing the burden on the small businesses that will be impacted by the proposal as it is currently structured. The comments will then discuss specific concerns with key portions of the proposal.

I. INDUSTRY BACKGROUND, SUMMARY OF NMMA COMMENTS AND ALTERNATIVE PROPOSAL

A. The Business of Boat Building and Tank/Hose Manufacturing.

NMMA is the largest recreational marine manufacturer trade association in the United States. It has over 1300 members manufacturing a multitude of marine products. Many NMMA members are small businesses with small streamlined staffs directly involved in producing marine products. The proposed regulations affect a portion of the membership which is almost all small businesses, with limited engineering staff, personnel and financial capabilities to deal with the complex technical and administrative regulatory requirements contained in the proposed rules. One example is a family-owned firm that testified at the October 7, 2002 hearing on this proposal which manufactures and supplies approximately 30% of plastic tanks used in boats and which employs approximately 40 people.[2] All of the plastic and metal tank manufacturers

[2] Pages 60-61, Transcript of Public Hearing on Proposed Evaporative Emission Standards for New Marine Vessels that Use Spark-Ignition Engines, Oct. 7, 2002 (Public Hearings).

subject to this rule are small businesses, as are the marine hose manufacturers. Many boat builders are also small businesses that do not have the resources to comply with the complex requirements contained in this proposal.

Boat production is far different from production of automobiles and other mobile source products. This is critical for EPA to fully understand. Boats are usually built in small production lots. Thus, tanks and hoses (including routing and couplings) are individualized such that production runs often cover only a few to several hundred tanks and hoses of certain size and configuration. Designs, molds, and production lines all need to be changed as orders from boat builders change. The costs of these frequent changes are allocated over the small number of products in a production run. In the United States fewer than 225,000 boats with integrated fuel systems are sold annually, versus approximately 17 million passenger cars and light-duty trucks.[3] While both boats and cars/trucks have fuel tanks and lines, that is where the similarity in industries ends.

There are also unique safety considerations in manufacturing boats. Boats are not like cars. A fuel leak in a car is vented away in the open atmosphere, or falls on the ground where it evaporates in the wind. In a boat it collects inside the boat, in the bilge. If there is an engine fire in a car, the operator usually has the chance to pull off to the side of the road, and get out of the car. You cannot walk away from a boat fire. Thus, boating safety is a very important issue that is tightly regulated by the Coast Guard and by industry standards. Because of the environment in which they are used, boats are designed, built and regulated in a manner in which land-based motor vehicles are not.

B. EPA's Proposed Regulatory Scheme.

The proposed EPA regulations to control evaporative emissions from boats are closely modeled after those regulating emissions from automobiles and other land-based mobile sources which typically are built by integrated manufacturers. The standards and technology proposed reflect that used by the automobile industry without recognizing the differences between a land and marine environment (*e.g.*, the corrosiveness of water on parts, the special safety considerations, etc.) The compliance mechanisms -- certification, selective enforcement audits, recall, useful life, warranty, and defect reporting -- all come from regulations for land-based mobile source products, which are generally based on regulations to control emissions from automobiles.[4] They are wholly inappropriate for this segment of the marine industry, particularly at this time when no one in the industry has experience with the technologies to be used.

As stated previously, the disparity between the automobile and other integrated industries and marine manufacturing are enormous. Aside from the total industry volume noted above,

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[3] Automotive News, 2001 Market Data Book, p. 5.
[4] *See* 40 C.F.R. Part 85 and Part 86.

there are other significant differences based on the size of the industries. Where an automobile manufacturer may use one tank (and related hoses and connectors) in up to 500,000 vehicles, a boat builder may use one tank for less than 100 units. Automobile manufacturers can, because of the economy of scale, cause vendors to modify product, research and resolve specific problems for them, whereas boat builders and tank/hose manufacturers cannot do this. They are simply too small to demand such attention and investment. Automobile manufacturers combine and develop their own staff of experts to solve problems to meet new developing standards and regulations; boat builders and tank/hose manufacturers cannot afford to do this.

The administrative requirements contained in the proposal including testing for certification, maintenance of records, warranty, recall and defect reporting, which can be absorbed with relative ease into the cost of business by a large manufacturer, could bankrupt many of the small businesses in the tank, hose and boat building businesses. These programs, if effective at all in the marine industry, must be specifically designed for this industry -- which has not been done in the proposal. One size of a regulatory program does not fit all. As was stated at the October 7, 2002 hearing, the best way to describe those subject to this regulation is to describe what they are not -- they are not automobile manufacturers.

Finally, the proposed rules need to be put into context of what the marine industry is facing. These rules are only one on a long list of new rulemakings which are being directed at the boat building industries. The EPA stated in this proposal's preamble that it plans to revisit the 1996 outboard and PWC rule following the completion of the marine catalyst test program.[5] In addition, the industry is currently facing an exhaust emissions rule in California which would require the use of catalysts,[6] four NESHAPs for stationary source emissions,[7] marine diesel engine rules[8] as well as these evaporative emission rules. All of this places a huge stress on an industry which is totally dependent on discretionary spending by consumers. Unlike cars and trucks, most purchasers of boats in the U.S. use them for recreational purposes, not for basic transportation needs.

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[5] *See* 67 Fed. Reg. 53050 at 53072, Aug. 14, 2002.

[6] Marine Engine Emission Standards -- 2003 and later, Title 13 C.C.R. §§ 2111, 2112, 2139, 2140, 2147, 2440-46, 2444.2 (July 26, 2001).

[7] The four rules are:

(1) (Proposed) National Emission Standards for Hazardous Air Pollutants: Engine Test Cells/Stands, 67 Fed. Reg. 34548, May 14, 2002.

(2) (Proposed) National Emission Standards for Hazardous Air Pollutants: Surface Coating of Miscellaneous Metal Parts and Products, 67 Fed. Reg. 52780, Aug. 13, 2002.

(3) (Proposed) National Emission Standards for Hazardous Air Pollutants: Plastic Parts and Components, 67 Fed.Reg. 72276, Dec. 4, 2002.

(4) (Final) National Emission Standards for Hazardous Air Pollutants: Boat Manufacturing, 66 Fed. Reg. 44217, Aug. 22, 2001.

[8] 67 Fed. Reg. 68241, Nov. 8, 2002.

NMMA is a strong supporter of environmental protection and agrees with the goal of reducing evaporative emissions from boats. However, NMMA wants a rule that works in the context of the boating industry. The proposed rule will not do so. Therefore, rather than merely saying what does not work, NMMA is proposing a regulatory program that it believes will work. This program, quite frankly, involves risk for the industry, because none of the technologies which would be used to reduce evaporative emissions has been proven for the marine industry. But, for the good of the environment, the industry is willing to assume some level of risk.

The NMMA proposal includes the following:

1. Adopting rigorous design-based standards to control permeation losses from tanks and hoses. Implementation of the permeation standard would be in MY 2007 (four years after finalization of the rule) for hoses and six years after the finalization of the rule for tanks.

2. Certification to specific industry-wide permeation design standards for hoses and tanks. This will assure all tanks and hoses installed during and after the model years use the new technologies.

3. Joint industry/EPA study to determine the appropriateness of various standard levels and compliance mechanisms (useful life, warranty, recall, defect reporting) for implementation in future years.

4. Joint industry/EPA/Coast Guard study to determine the need for, and, if needed, the method of controlling diurnal emissions from boats. Diurnal emission standards and the EPA specified compliance provisions would be delayed until the completion of the studies.

5. A modified import provision such that the standards would apply to boats built after the effective model year of the regulations.

The net result is that the Agency would obtain a very large portion of the reductions it estimated, and obtain a commitment to determine the appropriate programs that will work for the boating industry.

II. EPA's PROPOSED STANDARDS AND IMPLEMENTATION TECHNIQUES MUST BE SIGNIFICANTLY MODIFIED TO MINIMIZE BURDENS IMPOSED ON THE MARINE INDUSTRY

It is NMMA's understanding (based on meetings between EPA and individual manufacturers and with the industry generally) that EPA does not intend to cover certain engine-related components in these regulations. Particularly, the rule will not cover the permeation from vents (such as carburetor bowl vents) and vent hoses from the engine. Primer bulbs would be considered part of the engine hose construction and, thus, not be covered. In addition, the rule would not cover small fuel holding vessels such as carburetor bowls or vapor separator tanks.

Since EPA has indicated that the rule will not cover these components, NMMA has not included comments on these items in this document. If EPA should change this position, NMMA reserves the right to submit supplemental comments in opposition to any evaporative regulatory requirements for these components.[9]

The remainder of these comments will be focused on major issues associated with the proposed rule. Since NMMA believes the diurnal standards proposed must be deleted from the final rule, it is not necessary to provide comments on the "blue sky" emission standards, averaging banking and trading, and other complex regulatory proposals tied to diurnal emission control.

A. Diurnal Emissions.

1. The Proposed Emission Standards Would Lead to Pressurization.

The EPA has suggested a variety of technologies that could potentially be used to meet the diurnal requirement. EPA has acknowledged that several of these technologies were not practical for marine application (charcoal canister and floating fuel and vapor separator).[10] Others such as the bladder fuel tank and volume displacement bag are very costly and may be impractical due to the irregular configuration of many marine fuel tanks.[11] Initial cost quotations, for example, for bladder tank system for marine application would be three times that of a conventional fuel tank; a volume displacement bag system for a 75 gallon tank is estimated to cost an additional $80 over current tank. Other options still need substantial research, development and demonstration to see if actual implementation is possible (*e.g.*, volume -- compensating airbag which EPA indicates is still being investigated to determine materials to be used). Thus, the only other technique that appears to be effective to control diurnal emissions relies on the use of pressurized tanks or fuel systems.

EPA has proposed a standard of 1.1 g/gal./day for diurnal emissions.[12] The Agency estimates this would result in a 25% reduction of diurnal emissions from spark ignition marine vessels.[13] NMMA has numerous concerns with the requirement to control diurnal emissions. First and foremost, the technology advanced by EPA to control diurnal emissions would require pressurized tanks or fuel systems. The pressurization of current cross-linked polyethylene tanks would likely result in deformation of the tanks. This could, among other things, lead to leaks, which is a major safety concern, particularly in the marine environment and given the location of these tanks in the bilge of vessels. Due to the flat surfaces on many marine fuel tanks, 1 psi of

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[9] *See* Proposed Rule 40 C.F.R. § 1045.1(f), 67 Fed. Reg. 530105, Aug. 14, 2002.
[10] 67 Fed. Reg. 53070, 53071, Aug. 14, 2002.
[11] 67 Fed. Reg. 53070, Aug. 14, 2002.
[12] Proposed Rule 40 C.F.R. § 1045.105; 67 Fed. Reg. 53105, Aug. 14, 2002.
[13] 67 Fed. Reg. 53060, Aug. 14, 2002.

pressure will distort the midpoint by 3 to 6 inches,[14] causing sending units and pick-up tubes to be inaccurate, molded inserts to detach from the plastic and potentially leaking, vent tubes to bend, and stress cracks in plastic tanks to occur. All of this creates potential performance problems and a real, substantial, safety hazard in a much less forgiving environment than for land-based vehicles and products.

Pressurization of the fuel tank to minimize diurnal emissions creates a safety hazard by disabling the function of the anti-siphon valves used in the fuel feed lines that route fuel from the tank to the engines. Current anti-siphon valves are designed to prevent the siphoning of fuel into the vessel's bilge if a leak develops in the fuel system between the engine and tank. "Anti-siphon valves are designed to open at -0.37 to -0.85 psi vacuum. Pressurization in the fuel system over -0.37 psi eliminates the anti-siphon valve's safety feature and could cause the valve to open and potentially leak gasoline into the bilge." Current Coast Guard standards require the use of anti-siphon valves as a safety precaution.[15]

Aluminum tanks would not deform as much as plastic tanks,[16] but do corrode over time due to the operation in the hostile marine environment. This also creates a safety concern. While the aluminum tank manufacturers are working on this issue, the marine environment presents a continuing challenge. Any program that would lead to the *de facto* elimination of plastic fuel tanks for marine use could be a regression in this area. It would also result in the elimination of several viable small businesses.

The Coast Guard and the industry standard setting organization (the American Boat and Yacht Council) both do not favor the use of pressurized fuel tanks and fuel systems.[17] The Coast Guard will allow case-by-case approval of pressurized components, but it does not favor widespread use of pressurized tanks or fuel systems, which would be required under the proposed rule.

Pressurization of tanks also leads to significant liability concerns for both tank manufacturers and boat builders. To the extent that the risk of leakage, fire and explosion increases as a result of the requirements EPA is proposing, many companies will be unable to obtain insurance coverage. This would have the effect of putting the very existence of these companies in significant peril, since these small businesses cannot self-insure.

Finally, the control of diurnal emissions is not needed. Diurnal emissions result from wide temperature differentials in the ambient air that affects the temperature and pressure of the fuel in the tanks. Fuel tanks in a boat are often below the water line; virtually all tanks are

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[14] Public Hearing Testimony at p. 52.
[15] 33 C.F.R. § 183.568(b).
[16] While deformation in aluminum tanks is less than for plastic tanks, structural changes may be required to avoid tank failure at the baffle weld points.
[17] *See*, 33 C.F.R. §§ 183.520 and 183.542; and ABYC H-24 gasoline fuel systems.

surrounded by the boat hull and/or other equipment. Thus, marine tanks are *de facto* insulated, so they do not experience the variation in temperature that other land-based mobile sources experience. The EPA acknowledges this fact in the preamble to the regulation where it speaks of the "inherent insulation" of tanks when installed in boats.[18]

Testing facilities (SHEDs) currently available are of limited size and do not allow for testing of all vessel sizes currently using plastic fuel tanks. Expenses for building a SHED to accommodate larger vessels would be an undue burden on the small business boat builders. Estimates to construct such a SHED range in the neighborhood of $400,000.00. SHED testing of plastic fuel tanks on sawhorses is not representative of real-life diurnal temperature variations which are discussed more fully below.

In practical terms, a keel-mounted tank is insulated by the boat, and does not go through the ambient temperature swings defined in the proposal. That results in more than a 25% reduction in venting emissions from the baseline proposed. In fact, in a recent test performed by NMMA using procedures recommended by EPA, the diurnal or "venting" emission control standard of 1.1 g/gal/day was achieved by a boat tested by the Industry. This testing shows that a diurnal requirement, and the need for additional pressurization of the system, is not required. A detailed presentation of the test program, the data and conclusions is contained in Attachment I to these comments. NMMA also notes that the EPA deleted a diurnal emission control requirement from the recently promulgated rule for small non-highway spark ignition engines[19] and did not include diurnal control in the new proposed regulations to control emissions from highway motorcycles,[20] which is part of this same rulemaking proposal. The EPA did not propose to regulate diurnal emissions in either case because the emissions were expected to be proportionately small.[21] NMMA suggests that any diurnal emissions from boats would likewise be proportionately small and, therefore, control of such emissions would be unnecessary.

Given the safety and liability concerns and the fact that there is no environmental benefit NMMA recommends that diurnal emission requirements be dropped from this regulation. NMMA would be willing to cooperate with EPA on future studies to determine if control of diurnal emissions is needed, and if this study determines that safe, cost effective control techniques for marine application were available, this issue could be addressed at a later time.

2. Test Procedure Concerns.

First, let us again state that the Industry does not support the requirement for diurnal emission control for boats. However, while reserving this position, NMMA offers comments on the EPA diurnal test protocols as it applies to recreational boats. Much of this information was

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[18] 67 Fed. Reg. 53070, Aug. 14, 2002.
[19] 67 Fed. Reg. 68241, Nov. 8, 2002.
[20] 67 Fed. Reg. 53081, Aug. 14, 2002.
[21] Id.

derived from and can be supported by the NMMA diurnal and permeation test program. We believe the testing requirements are deficient in several respects.

a) Testing does not consider the insulation effect of the boat on diurnal emissions.

Tanks that are mounted in a boat are afforded substantial insulation from the ambient temperature. While it might be easier for the Agency to test components standing nude and unprotected in a VT-SHED, the testing does not represent the emissions that are seen under actual conditions. "Venting" emissions are proportional to the temperatures experienced inside the tank during the heating period of a day. Tests performed by the NMMA on an 18' runabout showed that the typical fuel tank temperature experienced during the diurnal was 78 to 90ºF during a 72 to 96ºF ambient temperature change. The temperature rise in the tank was 12°F, half of the 24°F change in ambient temperature. Testing the bare tank discounts the most important tool and control device available to the boat builder – the insulating effect of the boat.

b) Fans are not necessary.

The requirement that a fan be used to blow on a tank during the diurnal is a misplaced carry-over from automotive testing, and has no relevance for in-boat tanks. While one or more surfaces of an automotive tank are often directly exposed to the environment, and the presence of wind can increase the heat transfer from the ambient to the fuel during the heating period, the keel-mounted marine tank is covered by the deck, and not exposed to the wind.

c) Do not need 3-day tests.

The proposal for a 3-day test is another misplaced carry-over from the automotive experience. The NMMA diurnal data presentation (Attachment I) demonstrates that, absent some form of a storage device such as carbon absorbers, the highest diurnal emissions would occur on the first day. The additional cost and delay of the second and third day have no technical or practical justification.

d) Direct sunlight requirement is not cost justified.

The proposal to require direct sunlight during diurnal testing of exposed tanks must be relegated to a research project until it has been developed and cost justified. The automotive requirement for solar loading during the air conditioning exhaust emission test (SFTP) required the construction of special testing chambers costing literally millions of dollars, for limited use and benefit. This requirement is beyond the limited resources available to the small businesses that manufacture fuel tanks

B. Permeation Requirements.

1. Emission Standards for Tanks Should be Design Based.

The EPA has proposed to set standards for the permeability of tanks at 0.08 g/gal./day.[22/23] This standard would represent about 95% reduction from current levels of evaporative emissions from fuel tanks.[24] These standards would become effective six years after the rule is finalized. EPA has based these standards on fuel tank manufacturers either molding a layer of ethylene vinyl alcohol or nylon between two layers of polyethylene, or by treating the surfaces of the fuel tanks with a fluorine gas (fluorination) or sulfur dioxide (sulfonation). A third method may be to use nylon in the molding process in place of the cross-linked polyethylene currently used.

Manufacturers of plastic fuel tanks used in the marine industry generally use a rotational molding process, using cross-linked polyethylene. This process allows manufacturers of the plastic fuel tanks to keep cost competitive and to provide the wide variety of shapes needed for the numerous designs of vessels (approximately 2500 molds are currently used by plastic tank manufacturers).[25] The two most promising methods of reducing permeation of fuel vapors from plastic tanks are to barrier treat the tanks by fluorination or sulfonation. Both fluorination and sulfonation will require the tank manufacturer to have the space to install reactor equipment at their facilities, and obtain local building and state environmental permits to operate this equipment. A second option would be for the tank manufacturers to send the tanks out for treatment to the single company that operates fluorination or sulfonation treatment activities. Both of these options are expensive and create significant disruptions to manufacturing operations. Based on a labor study conducted by a plastic tank manufacturer, the man hours required to perform sulfonation and fluorination are greater than the man hours required to manufacture the tank. In addition to these labor costs, one has to consider an estimated 2-4% scrappage cost for tanks that are either damaged in the process or do not meet the treatment requirements, the cost for installing the equipment and, finally, royalty costs. In addition, on-site fluorination and sulfonation would require installation of scrubbers and treatment equipment, basically introducing a hazardous process to an industry where one did not previously exist. Tank manufacturers estimate the cost of sulfonation or fluorination to meet the proposed standard to be an additional cost of $1.25 to $1.50 per gallon of fuel tank capacity depending on tank size and shape. [26] This represents an approximately 50% - 60% increase in the cost to the boat builder.

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[22] 67 Fed. Reg. 53105, Aug. 14, 2002.
[23] The g/gal/day form of the standard does not take into account the fact that permeation is basically a surface area issue. The industry believes that the g/m^2/day standard being proposed in California is the more correct form.
[24] 67 Fed. Reg. 53060, Aug. 14, 2002.
[25] Public Hearing; testimony at p. 54.
[26] Costs have been updated since submitted at the Public Hearing; testimony at p. 139.

While both of these processes are promising for use in fuel tanks for boats, neither has been validated in a marine environment, nor demonstrated to remain effective over the required useful life or warranty period. At the October 7, 2002 public hearing, it was made clear that the only warranty to be provided to tank manufacturers was that the treatment would remain in place for five (5) years (*i.e.*, not that it would remain fully effective for 5 years).[27] This leaves tank manufacturers with enormous potential exposure under the in-use compliance programs discussed later in these comments.

The fuel tank permeation standard of 0.08 g/gal/day is unacceptably stringent for plastic tanks, and currently unachievable in-use for the useful life of 10 years. To establish that such a level is "technically feasible" requires some showing that permeation, as defined in the proposal, is durable when applied to cross-linked polyethylene and can be controlled at such a level. This has not been done in this proposal. In fact, in other recent tests three of six small lawnmower tanks were treated to control permeation and tested by CARB for 1.2 million cycles of slosh. These tanks were estimated to have permeation rates at 0.6 to 0.8 g/gal/day after the slosh cycles. This approaches an order of magnitude higher than the proposed control limit. While there is data to suggest that permeability can be controlled to some degree in new tanks, there is no appropriate data for marine tanks to indicate conformance in-use over any extended period (such as 10 years) with <u>any standard at this time</u>. Establishing a feasible "in-use" standard will require much additional testing and verification. NMMA strongly urges that the requirement to meet the permeation standard over a 10-year useful life should be deleted until such studies are performed.

EPA suggested that rotational grade nylon is a possible alternative material which could be used in the rotational molding process. This would involve additional material and processing costs that would raise the cost of plastic tanks by up to 150%.[28] This would destroy the competitive equilibrium that exists between plastic and metal tanks. There is also the concern that nylon might not be compatible with gasoline containing 10% ethanol. Investigations by tank manufacturers indicates that alcohol in fuels would attract moisture which is necessary for the material to retain its performance characteristics. Given the cost and effectiveness issue this does not look like a viable alternative at the present time. However, NMMA members will continue to examine this and alternative materials.

NMMA does believe that, while it has never been tested in actual marine applications and there are many technical questions that still need to be answered, the barrier treatment technology (fluorination and sulfonation) could be used to control permeability emissions from marine fuel tanks. EPA has asserted in the preamble to the proposed regulations that both fluorination and sulfonation of fuel tanks could reduce permeation emissions by more than

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[27] Public Hearings; testimony at pp. 58, 131, 144.

[28] The cost of the material for tanks alone would increase by 225-275%, Public Hearing; testimony at p. 58.

95%.[29] While NMMA does not have data to support this assertion, it does believe that significant reductions in permeability emissions could be achieved at a reasonable cost by achieving a specific design level for fluorination (level 3), and an equivalent design level for sulfonation, or use of other processes and materials.

NMMA, therefore, recommends that EPA modify the requirements for permeability emission from fuel tanks to require a design standard of Level 3 for fluorination and an equivalent level for sulfonation. As an alternative, tank manufacturers should be able to use other materials and/or processes if they can be shown to meet levels that are equivalent to those achieved by these treatment techniques. These standards should only be applied to newly manufactured tanks, and not over the useful life.

2. Test Procedure Concerns.

While NMMA strongly recommends the use of a design standard for permeation control and strongly opposes any compliance testing requirement for tank manufacturers or boat builders, NMMA is offering the following information supported by the NMMA testing, on how baseline data can be collected for marine vessels.

a) Test temperature is appropriate.

NMMA agrees with the proposal that 23° C is appropriate temperature for this testing. 23° C is approximately room temperature. These tests would be less expensive at 23° than at 40° C. Given the inherent insulation in boat fuel tanks, the 23° C temperature more appropriately represents the temperatures found in these tanks.

b) Test should use ASTM Fuel C.

The permeation test should be conducted with ASTM Fuel C. Fuel C is less variable than gasoline, thus, the tests are more repeatable than when using gasoline. If the test fuel must contain 10% ethanol then CE10 should be used. Note that both ASTM Fuel C and ethanol have higher permeation activity than an average gasoline. This should be considered when setting the standard. There is no reason to include 15% methanol in any of the test fuels. Methanol was once considered as a gasoline "extender," but the requirements for a co-solvent, and experiences in the field have made it unlikely to be used. Methanol is a very aggressive component for permeation. If this were included in the test fuel the industry would have to spend money to control methanol emissions when it is not a component of gasoline today, nor considered viable for future use.

c) SHED test should be an allowable option for measuring permeation.

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[29] 67 Fed. Reg. 53071, Aug. 14, 2002.

Permeation can be measured by the gravimetric, or "weight loss" in a very cost effective manner, but only on small tanks. A gravimetric procedure requires sealing the tanks to prevent any other opportunity for weight loss. This has been difficult to do on small engines. Larger tanks with multiple penetrations for sending units and vents offer additional challenge. Gasoline weighs over 2800 grams per gallon. 20 gallons of gasoline (small for a boat tank) would weigh over 56,000 grams. It is not practical to measure the weight loss to the accuracy required if the tank plus the fuel exceeds 60,000 grams. The measurement procedure should allow a SHED test option for all the tanks. Since the test requirement is done at constant temperature, the tank(s) could wait in a well ventilated constant temperature soak room, and then be placed in a SHED for a one hour estimate of the daily 24-hour permeation rate. A SHED type measurement allows one to vent the tank externally during the permeation evaluation. This also reduces the error in including pressure caused leaks in the permeation evaluation.

C. Permeation Requirements -- Hoses Should Meet An Alternative Level That Does Not Compromise Performance and Safety of the Fuel Line.

EPA asserts that permeation through fuel and vapor hoses causes up to 40% of the evaporative emissions for boats. EPA has, therefore, proposed a permeation standard of 5 g/m^2/day. EPA believes that replacing current hoses with low permeability hoses meeting the proposed standards will result in a 95% reduction of these emissions.[30] EPA proposed that these standards become effective in 2008, but asked comments on the ability of the industry to meet these standards earlier (in 2006, or 2007).

Three general areas of concern arise in considering the proposed EPA standards for fuel lines. These are technological feasibility, safety, and durability. Low permeability hoses are used in the automobile industry, and in some applications in the chemical industry. However, the application in the complex routing systems found in many boats has not been proven. That is because there are critical differences between boats, automobiles and chemical applications.

First, the couplings and routings used on automobile fuel lines are meticulously designed for specific models often at high cost. This high cost, however, can be prorated over thousands (or even hundreds of thousands) of units on which they are used. In the boating industry there are countless numbers of hose coupling route combinations for boats. Most of these have small production runs. This increases the cost dramatically and imposes a design requirement that is not like that on land-based products and vehicles. Further, marine hoses must operate in an environment with more mechanical stress and vibration. Hose connections must be more secure; lines must be able to resist shock and vibration and must fit properly under these conditions. If not, a safety hazard could be created. Based on statements made by the suppliers of low permeation materials, they project that the bulk cost for quarter inch hose would increase by >

[30] 67 Fed. Reg. 53060, Aug. 14, 2002.

600%. This number would be even greater for three- quarter inch hose. These factors must be considered in applying new technology to vessels.

In addition, the same hose type used in boat construction will have to be pre-formed for outboard/personal watercraft engine use. Some confined areas will require hoses to be pre-formed down to an approximate bend radius of 1 inch. This will increase cost by approximately 25%-30% over current charges. This price increase would be in addition to other cost increases for tooling changes associated with NMMA's proposed levels.

The new technology, Dow/DuPont F200 hose, discussed at the October 7, 2002 public hearing was, once again, designed for use on automobiles. It has not been proven for marine application and it has installation and durability issues which must be resolved before this type of hose construction can be used to comply with any regulations for boats. Marine fuel hose manufacturers have already experienced a number of durability concerns trying to implement these new designs to control permeation. Distributors, assemblers and end users have experienced failures from poor fit to flow restrictions and leaks (from kinking of hoses using certain barrier materials).[31] Therefore, NMMA has serious concerns about the application of this technology to comply with these regulations on the EPA regulatory schedule.

Finally, we have recommended that ASTM Fuel C should be used in compliance testing. Use of this fuel results in more permeability from plastic tanks and hoses. Thus, any standard would need to be adjusted for this fuel.

NMMA believes hose manufacturers can reduce permeability emissions substantially by the use of known technology such as gas curing and can do so ahead of the EPA proposed schedule. But, they cannot meet the proposed permeation standard of 5 g/m^2/day. The schedule depends on the stringency of the standard -- the more stringent the standard, the longer it will take to comply. Anything more stringent than the levels proposed by NMMA would need to be vigorously tested to assure the hoses meet both the Coast Guard and ABYC standards. Assuming that the hoses meet the requirements of the Coast Guard and the ABYC, the manufacturers would need to retool and change their manufacturing processes. Thus, a lead time of at least six years from the date of promulgation of the rule would be needed to implement the regulations.

NMMA suggests that EPA revise the regulations to require fuel line manufacturers to meet standards of 20 g/m^2/day for feed and vent lines and 50 g/m^2/day for filler lines. Applying EPA's emission model these limits would result in an 83% reduction in hose permeation when compared to present performance. Manufacturers propose that this could be done by 2007 four years after promulgation of the final rule (assuming final promulgation in 2003) and one year ahead of the EPA proposed schedule. NMMA believes the industry could reach this level and avoid the problems experienced to date in applying low permeability hose technology in boats.

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[31] Public Hearing; testimony at p. 101.

NMMA also suggests that EPA and the industry continue to study the lower permeability hoses to see if problems encountered in the past can be resolved. This interim step would result in substantial reduction of permeability emissions from hoses ahead of schedule. It would allow time to assess the applicability of this new technology to boats, and allow time to phase in the new hoses if appropriate.

III. COMPLIANCE MECHANISMS ARE OVERLY COMPLEX AND MUST BE SIGNIFICANTLY SIMPLIFIED FOR THE MARINE INDUSTRY

The Agency has proposed a list of compliance mechanisms straight from the land-based (mostly automobile) regulatory programs. As discussed in detail below, these mechanisms have not been validated for the boating industry and, as drafted, will impose an enormous cost to tank and hose manufacturers and boat builders. Some provisions are simply unworkable as proposed. A discussion of the particular compliance mechanisms follows.

A. Useful Life Cannot be Determined at This Time.

The EPA has proposed a useful life period of 10 years for the marine evaporative emission control systems.[32] This is based on being consistent with the regulatory useful life of outboard marine engines, and EPA's "belief" that engines and boats are intended to have the same design life.[33] It is premature to establish a useful life period for marine tanks and hoses, and EPA must withdraw this provision. There are several reasons for this. First of all, the regulations do not apply to the boat engine or to the boat as a whole. They apply to specific parts on the boat (tanks and hoses). Second, they do not apply to tanks and hoses generally, but to specific environmental parameters for tanks and hoses (*i.e.*, evaporative emissions). There is little, if any, relationship between the life of a boat and the evaporative emission performance of its tanks or hoses. There is simply no data that demonstrates that the technology (*e.g.*, the barrier protection applied to plastic tanks by sulfonation or fluoridation) to control emissions will be effective to control permeation to the proposed standards for 10 years. In fact, the data from the California test program cited by the Agency in the preamble to the regulations[34] does not support this proposition. First, the tests were conducted on six lawn mower tanks with a one-quart capacity. This is hardly representative of tanks in marine vessels. Second, the "slosh" tests are only one factor to consider. Other factors besides simple one-plane slosh can affect permeation. EPA has no data on the cumulative effects of:

- Long-term pressure-vacuum cycles with fuel in the tank;
- Physical distortion caused by mounting stress;
- High frequency vibration effects from the engine;
- Elevated temperatures resulting from engine operation; or

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[32] 67 Fed. Reg. 53063, Aug. 14, 2002.
[33] Id.
[34] 67 Fed. Reg. 53071, Aug. 14, 2002.

- In-use fuel contaminants such as sour gas.

All of these, and more, must be evaluated before EPA can decide if the durability, and the achievable control level, can be established on a marine tank system.

Finally, the tests cited by EPA illustrate unacceptable variability (3 tests at 1.1 - 1.3 g/m^2/day to 3 tests at 2.4 - 2.9 g/m^2/day), and levels in excess of both the proposed level (0.08 g/m^2/day) and the California standard (1.0 g/m^2/day). Attachment II contains more discussion of the tests cited by EPA. Similarly, there is no data that demonstrates that material put in hoses to control permeation will be effective in a marine environment for 10 years.

EPA's "belief" is not enough of a basis to impose such a severe requirement. The economic consequences are extraordinarily large considering that a tank or hose manufacturer could face a recall should the product fail to meet EPA's proposed standards over the useful life. A wide-scale recall could destroy these small companies. The EPA must have a sound scientific basis for its useful life determination -- not just a "belief" based on land-based systems. There simply is no scientific correlation between the useful life of a boat engine and the useful life of the evaporative emissions performance of tanks or hoses. NMMA is proposing to engage in a joint study with EPA to determine, among other things, the useful life of tanks and hoses for evaporative emissions. EPA must delete this provision from the regulations at least until the study is completed and a better scientific basis for a useful life period is developed.

B. The Proposed Emissions Warranty Period Is Excessive And Not Based On Any Experience With The Technology To Be Used.

EPA has proposed to impose an emissions warranty of one-half useful life (*i.e.*, five years) for the emission-related parts of fuel systems of marine vessels.[35] The proposed regulations would also require the manufacturer to offer the warranty for a longer period if the manufacturer offers an extended warranty for these parts.[36]

Just as for useful life, the EPA provides no factual or scientific basis for its determination that the evaporative emissions control on fuel tanks and fuel lines can or should be warranted for five years (or longer). Once again, EPA must remember that the emissions warranty is for the evaporative emissions. It is not enough for EPA to assert that the parts will function (*i.e.*, will not leak) for 5 years. The warranty covers the loss of evaporative emission control (*i.e.*, permeability of fuel tanks and diurnal control). To our knowledge, there is no data that demonstrates that tanks and hoses under pressure and/or with treatment for permeation can meet the stringent EPA standards in the marine environment for 5 years. This is a much more hostile operating environment than for land-based products and vehicles and EPA cannot simply infer that if land-based approaches may work that the same will be true in marine usage.

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[35] 67 Fed. Reg. 53063, Aug. 14, 2002.
[36] Id.

Further, the warranty fix in a boat could be very expensive -- far in excess of repair costs for land-based products. Fuel tanks are located at various positions in boats that are not easily accessible. In most cases they are located under the deck within the hull and covered by other equipment. Replacement of a tank is time consuming and costly, in some cases costing several thousand dollars. This would be ruinous for a small marine business. Again, it appears EPA has simply adopted a technique used in the automobile industry and has attempted to require it for the marine industry. This is premature and inappropriate, particularly in the absence of data to show that these systems will control emissions to specified levels over time.

Finally, NMMA questions the consumer's ability to identify a non-compliant hose or tank. Generally, a tank is returned under warranty if a leak occurs. The ability of the consumer to measure permeation does not exist.

We note also that the warranty for automobile fuel tanks and hoses is only 2 years/24,000 miles.[37] Fuel tanks and hoses are much easier to replace in an automobile or light-truck. It is hard to understand why the industry that makes automobiles is required to warrant these parts for 2 years while the small businesses which are in this portion of the marine industry must provide a warranty of 5+ years. EPA must establish a sound scientific database for this requirement before it implements this provision. It has not done so. As stated earlier, NMMA has offered to study this issue jointly with EPA for later implementation. In the meantime, this requirement must be deleted from these regulations.

C. Recall Provisions Are Premature And Could Be Ruinous To Boatbuilders AndTank/Hose Manufacturers.

EPA has also proposed to apply the requirements of Part 1068, subpart F for recall of non-complying products.[38] Under these regulations, if EPA makes a determination that a substantial number of properly maintained and used systems do not conform to the regulations of the chapter during their useful life, the manufacturer must remedy the nonconformity. It is unclear whether EPA intends the tank or hose manufacturer or the boat builder to remedy any such problem. The regulations further elaborate on the procedure for conducting a recall campaign. All of these are generally in line with the requirements for recalling automobiles.[39]

First, we note the fact that a recall fix, like a warranty fix, could be very expensive in a marine application (see discussion of warranty costs above). Second, there is no definition of "substantial number" in the proposed rule. This means manufacturers are left to guess as to when such liability would occur. Third, recall assumes that the affected tank and hose manufacturers and boat builders have adequate records of current owners of their equipment to

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[37] Section 207(i) of the Clean Air Act.
[38] 67 Fed. Reg. 53065 and 53115, Aug. 14, 2002.
[39] *See* 40 C.F.R. § 85, Subpart S.

conduct a recall. This may not be possible for any of these parties. Fourth, the response rate would likely be small and environmental benefits may be insignificant. EPA tacitly acknowledged the difficulty of using recalls in the marine manufacturing industry when it acknowledged in the preamble that "we also recognize the practical difficulty in implementing an effective recall program for marine vessels."[40] Finally, the proposed regulations are more stringent for the marine industry than for the automotive industry. The Clean Air Act and implementing regulations cut off testing for recall at three-fourths useful life for automobiles;[41] thus, reducing the liability of automobile manufacturers. The recall regulation proposed for marine manufacturers does not do so. For EPA to propose more onerous liability on the small businesses in the marine industry then the automobile industry cannot be justified on any technical or policy basis.

Finally, there is no provision to consider the economic impact from a recall order to a small business which could have marginal environmental effect at best. A recall fix could cost several thousand dollars for one part. When this is multiplied by several hundred parts, the cost goes into the hundreds of thousands or millions of dollars -- an astronomical amount for a small business. The risk associated with recall as well as warranty exposure may make it impossible for the tank, hose, and boat builders to obtain insurance for these events. Unlike the automobile industry they cannot self-insure or develop complex re-insurance arrangements those companies use to account for potential warranty and recall costs. As noted above for warranty, it is inconceivable that the small businesses in the marine industry should have regulations stricter than those in the automobile industry, especially when one recall with marginal environmental benefits could bankrupt one or more companies. This provision must be deleted from these regulations.

D. The Defect Reporting Is Extraordinarily Complex And Confusing And Will Impose Huge Burdens On Small Businesses Affected By These Rules.

The EPA proposal also would apply to defect reporting requirements in Part 1068, subpart F to these regulations.[42] These defect-reporting requirements are extraordinarily complicated and unnecessary. The only value to defect reporting is to determine whether a substantial number of products is non-conforming so a recall could be ordered. As discussed above, recall must be eliminated from these regulations. Thus, defect reporting at this time is unnecessary.

The defect reporting regulations proposed in this rule are confusing, as well as burdensome. The preamble to the proposed regulations refers to defect reporting provisions in

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[40] 67 Fed. Reg. 53065, Aug. 14, 2002.
[41] *See* Clean Air Act § 207(c)(5)(A) and (B).
[42] 67 Fed. Reg. 53065 and 53115, Aug. 14, 2002.

the proposal for Part 1068 regulations.[43] However, EPA subsequently changed these requirements when it promulgated the final regulations for defect reporting in Part 1068.[44] The new Part 1068 requirements differ substantially from the defect reporting regulations for automobiles.[45] The proposed Part 1068 regulations are far more complicated and burdensome than the existing rules for automobiles, and those promulgated for Part 1068 are even more complicated and burdensome than those proposed for Part 1068. In addition, the promulgated regulations are vague and sometimes inconsistent. For example, the promulgated Part 1068 regulations would require a manufacturer to keep records of and report as appropriate the combined warranty claims and replacement parts -- *i.e.*, hoses, tank lines, couplings, fittings, etc. -- sold. Some of the replacement parts would be used to satisfy warranty complaints; other parts are for normal replacement -- a situation that is common given the operating environment in the marine industry. How does a manufacturer count these parts? This appears to be double counting for the purpose of making it appear that defects exist when there are none. Further, this requirement places tank and hose manufacturers and boat builders in a position where they must constantly be in a position to defend why there is not a defect if EPA should inquire.

These regulations would require companies with less than 200 employees to set up elaborate accounting systems they can ill afford simply to comply with regulations which may have little, if any, environmental benefit. NMMA members have estimated that at least two additional employees per company would be needed simply to keep the records and do the paperwork required by these provisions (a huge number, considering most companies in the business only have 4 or 5 administrative employees). Unlike automobile manufacturers and other large mobile source-related manufacturers that have sophisticated systems and personnel assigned to perform warranty and replacement parts analysis, tank and hose manufacturers and boat builders do not currently have sophisticated systems in place to comply with the remarkably complex recordkeeping and reporting requirements contained in the final Part 1068 rules. These provisions place an additional unnecessary burden on the manufacturers in the marine industry for little or no environmental gain. Additional none of these costs were considered in EPA's cost evaluation. They must be eliminated.

E. The Certification Process Is Overly Complex For The Small Businesses Affected By This Proposed Rule.

The EPA proposed certification regulations[46] are similar to those for existing programs for other mobile sources of air pollution. In this process manufacturers test prototype designs and submit emissions data along with other information to EPA in an application for certification. Testing for evaporative emissions is done in a SHED device. The testing protocol is similar to those detailed in 40 C.F.R. Part 86 -- which are for automobiles. The protocol is

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[43] 67 Fed. Reg. 53064, Aug. 14, 2002.
[44] 40 C.F.R. § 1068.501; 67 Fed. Reg. 68241, 68443, Nov. 8, 2002.
[45] 40 C.F.R. § 85, Subpart T.
[46] 67 Fed. Reg. 53107, Aug. 14, 2002.

complicated and sophisticated. The regulations do provide that the products can be grouped into engine families to reduce testing costs. And while the proposal would allow design certification for diurnal evaporative emission requirements, test data would be required to certify fuel tanks and hoses to the proposed permeation standards. Certification could be obtained by the vessel manufacturer, the fuel system, tank, or hose manufacturer.[47] Subsequent manufacturers would need to certify that they are using certified systems and that the systems are properly installed.[48] While EPA has attempted to address some of the concerns identified by the marine industry, the proposed program is so complex and confusing that NMMA members are left trying to determine who has responsibility for certification. Moreover, no tank or hose manufacturer and no boat builders currently have the necessary analytical equipment or facilities to conduct SHED testing. All of this testing would need to be conducted off-site by trained parties.

Because of the variety of configurations and small production lots of marine product, certification testing will be highly expensive per unit produced when compared to that experienced by manufacturers in other related mobile source industries. As discussed above, the proposed testing requirements for both diurnal and permeation are complicated, which makes compliance by small manufacturers much more difficult. Further, testing requirements often affect the stringency of the standard. For example, the type of fuel used could result in more/less stringent design changes to meet the standard. Other testing requirements could more subtly affect test results, but still be real. The proposed certification scheme was originally designed to control emissions from automobiles. Experience with its use has largely come from automobiles; other integrated products or completed engines. EPA's existing certification program is designed and has been implemented to deal with major corporations with substantial resources. To that extent, it works effectively for automobiles and these other products. However, this approach does not transfer well to the small businesses in the marine tank and hose industry or to boat builders.

Therefore, NMMA is recommending that manufacturers of fuel tanks and fuel hoses certify that they are properly applying treatment or using material that is manufactured to meet industry permeation standards. The boat manufacturer would simply note that the product installed has applied the level of treatment/or uses materials that are determined to be compliant. These products would then be installed in accordance with the supplier's instructions. There should be no in-use requirements for the reasons stated above.

F. The Import Provisions Impose Retroactive Liability On The Marine Industry.

The proposed regulation (§ 1045.801) defines a new vessel as … "An imported non-road vessel that is not covered by a certificate of conformity issued under this part at the time of importation."[49] The preamble to the regulations state that "new" includes vessels that are

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[47] 67 Fed. Reg. 53063, Aug. 14, 2002.
[48] Id.
[49] 67 Fed. Reg. 53113, Aug. 14, 2002.

imported by any person whether newly manufactured or used.[50] The regulations would apply to all new vessels manufactured or imported after the effective date of the rule. In discussions with EPA staff, it appears that the intent is to cover all used boats imported into the U.S. after the date of this rule even if they were built before the effective date.

Currently, EPA mobile source regulations generally exclude imported products manufactured prior to the effective date of implementing regulations. However, the preamble to these proposed regulations for marine evaporative controls appears to say that all boats imported after the effective date of the regulations would need to meet the new evaporative emission requirements regardless of when they were manufactured. No explanation is given in the preamble as to why these regulations are different from those for other mobile source products or why such a requirement is necessary.

The preamble contains no basis for regulating boats manufactured prior to the effective date. Manufacturers of boats built prior to MY 2008 have no way of knowing that a boat sold for export will be re-imported. Requirements which reach back before MY 2008 would effectively be retroactive. This is certainly unfair and is of dubious legal authority. This retroactive requirement would also be very expensive for a person importing a boat because they would be required to modify the boat to an identical configuration under § 1068.315(f), in order to import the vessel. To do this the fuel tank and hoses would need to be changed. This process would cost at least several thousand dollars, and may act as a *defacto* barrier to importation.

It should also be pointed out that these proposed regulations would incorporate the requirements of 40 C.F.R. § 1068. Subpart D of these regulations contains requirements for importing boats. These requirements include a statement that in general engines (*sic* boats) that are imported must be covered by a certificate of conformity unless they were built before emission standards started to apply.[51] This contradicts the preamble to these proposed regulations; however, it is a much more sound policy. In addition, legal issues associated with retroactive liability would be eliminated.

NMMA recommends that the regulation make clear that only vessels built after the effective model year of the regulation -- domestic or imported -- would be covered by the regulations.

Conclusion

NMMA has proposed an alternative to EPA's overly complex and extraordinarily burdensome proposal which will achieve significant environmental benefits with much less cost to tank and hose manufacturers, boat builders, and purchasers of recreational boats. NMMA also stands ready to work with EPA to develop longer-term programs that appropriately address

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[50] 67 Fed. Reg. 53060, Aug. 14, 2002.
[51] 40 C.F.R. § 1068.301; 67 Fed. Reg. 68241, 68437, Nov. 8, 2002.

evaporative emissions in a marine environment. EPA should drop or modify those portions of its proposal identified in these comments and work with NMMA to implement the proposal outlined in these comments.

Sincerely,

John McKnight, Director,
Environmental and Safety Compliance