MID-LEVEL ETHANOL BLENDS: CONSUMER AND TECHNICAL RESEARCH NEEDS

HEARING

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENT

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRTEENTH CONGRESS

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Tuesday, February 26, 2013

MID-LEVEL ETHANOL BLENDS: CONSUMER AND TECHNICAL RESEARCH NEEDS

TUESDAY, FEBRUARY 26, 2013

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENVIRONMENT
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, DC.

The Subcommittee met, pursuant to call, at 2:01 p.m., in Room 2318 of the Rayburn House Office Building, Hon. Chris Stewart [Chairman of the Subcommittee] presiding.

LAMAR S. SMITH, Texas
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House of Representatives
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Subcommittee on Environment

Mid-Level Ethanol Blends: Consumer and Technical Research Needs

Tuesday, February 26, 2013
2:00 p.m. -4:00 p.m.
2318 Rayburn House Office Building

Witnesses

Mr. Robert L. Darbelnet, President and CEO, American Automobile Association (AAA)

The Honorable Wayne Allard, Vice President, Government Relations, American Motorcyclist Association (AMA)

Mr. Mike Leister, Member, Board of Directors, Coordinating Research Council (CRC)

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON ENVIRONMENT

HEARING CHARTER

Mid-Level Ethanol Blends: Consumer and Technical Research Needs

Tuesday, February 26, 2013
2:00 p.m. - 4:00 p.m.
2318 Rayburn House Office Building

PURPOSE

On Tuesday, February 26 at 2:00 p.m. in Room 2318 of the Rayburn House Office Building, the Science, Space, and Technology Subcommittee on Environment will hold a hearing titled, *Mid-Level Ethanol Blends: Consumer and Technical Research Needs*. The purpose of this hearing is to examine the scientific, technical, and consumer impacts of the Environmental Protection Agency's decision to allow the introduction of mid-level ethanol blends (E15) into the marketplace. Additionally, the hearing will examine the impact of E15 on engines and fuel supply infrastructure, and identify research gaps or areas in which policymakers and the public could benefit from more information on the fuel. The subcommittee will also receive testimony on related draft legislation.

WITNESS LIST

- **Mr. Robert L. Darbelnet,** President and CEO, American Automobile Association (AAA)
- **The Honorable Wayne Allard,** Vice President, Government Relations, American Motorcyclist Association (AMA)
- **Mr. Mike Leister**, Member, Board of Directors, Coordinating Research Council (CRC)

BACKGROUND

National consumption of gasoline and gasoline products has grown from 96.5 billion gallons a year in 1974 (the year the oil embargo ended) to 134 billion gallons a year in 2011.[1] As part of an effort to reduce reliance on foreign sources of oil, the Federal Government has supported numerous policies to increase efficiency of fuel use and supplant oil sources since the 1970s. One of these initiatives includes the production and use of biofuels through various tax incentives. More recently, this support is evidenced in the establishment of the Renewable Fuel

[1] Energy Information Administration. http://www.eia.gov/tools/faqs/faq.cfm?id=23&t=10

Standard (RFS) in the Energy Policy Act of 2005 (EPAct).[2] The RFS mandates that transportation fuels contain renewable fuels, such as biodiesel or corn-based ethanol. This was accomplished by a mandate that required 4 billion gallons of renewable fuels be blended into in the national fuel mix by 2006, and 7.5 billion by 2012.

Congress greatly expanded the RFS requirement in the Energy Independence and Security Act of 2007 (EISA), mandating blending of 15.2 billion gallons of biofuels by 2012, and 36 billion gallons by 2022.[3] The RFS expansion also required the use of advanced biofuels, and capped the amount of corn-based ethanol that could be used to meet the mandated volumes at 15 billion gallons.

The use of E10, or ten percent ethanol blended gasoline, was authorized by the EPA for use in 1978. Despite this authorization, E10 was not used on a widespread basis until the Clean Air Act Amendments of 1990 mandated the use of an oxygenate in fuel. By that time, the vehicle fleet had the necessary technology to absorb this level of ethanol in the fuel mix. Blending fuel at concentrations greater than E10 in order to meet the increased production volumes required by the RFS presents a challenge. This challenge is referred to as the "blend wall," or upper limit to the total amount of ethanol that can be blended into the national gasoline supply using E10. In an effort to avoid the blend wall, on March 6, 2009, Growth Energy and 54 ethanol manufacturers petitioned EPA to allow E15, a mid-level or intermediate ethanol blend, into the commercial marketplace. Under the Clean Air Act, the introduction of a new fuel is prohibited unless it is "substantially similar" to gasoline; however, the EPA is authorized to grant a waiver of this prohibition.

The EPA issued a partial waiver for E15 on October 13, 2010, allowing the introduction of E15 into the commercial marketplace for use in model year 2007 and newer cars, light-duty trucks, and SUVs. On January 26, 2011, EPA granted another partial waiver for use of E15 in model year 2001 and newer vehicles. The EPA did not grant a waiver for the use of E15 fuel in model years prior to 2001, non-road engines, vehicles, and equipment, motorcycles, or heavy-duty gasoline engines.

In order to grant these waivers, Section 211 (f) of the Clean Air Act requires the EPA to first determine that E15 would not "cause or contribute to a failure of an emission control device or system." This determination by EPA was based largely on a single set of tests conducted by the Department of Energy (DOE) in 2009-10. Referred to as the DOE Catalyst Study, the testing program only included 8 models of vehicles made in 2001-2006, and 19 models representing 2007 and newer vehicles.

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[2] P.L. 109-58, Energy Policy Act of 2005. Aug. 8, 2005.
[3] P.L. 110-140, Energy Independence and Security Act of 2007. Dec. 19, 2007.

In June 2011, EPA issued a misfueling rule intended to mitigate the potential for consumer confusion. The rule mandated a new label to be used on pumps at stations that sell E15, and it encourages, but does not require, measures to educate consumers about E15. The EPA's partial waivers also include conditions that require each fuel and fuel additive manufacturer subject to waivers to submit a misfueling mitigation plan (MMP). These conditions include measures for labeling E15 fuel pump dispensers, among other things. Despite several public concerns raised to the EPA, the agency approved the Model MMP submitted by the Renewable Fuels Association as "sufficient" to satisfy the partial waiver requirements on March 15, 2012. Since then, E15 has been introduced into the commercial marketplace in Iowa and Nebraska and, driven by RFS requirements, is expected in other parts of the U.S. soon. Additionally, the EPA approved a new blender pump configuration on February 7, 2013. This configuration was submitted by the Renewable Fuels Association for use by retail stations that plan to dispense E15 and E10 from a common hose and nozzle.

Coordinating Research Council Tests

The Coordinating Research Council is a non-profit research entity that directs engineering and environmental studies on the interaction between automotive and mobility equipment and petroleum products. The CRC has a research program on intermediate ethanol blends, and has released two reports on the impact of E15 fuels conducted under the direction of the Advanced Vehicle/Fuel/Lubricants Committee.

The first of these studies, released in April 2012, is the *Intermediate-Level Ethanol Blends Engine Durability Study*.[4] The study aimed to "investigate the effects of two intermediate-level ethanol blends on several models of current, on-road, non-Flex Fuel Vehicles." The study highlighted possible engine component wear caused by ethanol content in E15 and E 20 fuels, and identified various types of failures exhibited by engines running on E15 and E20. In summary, the report noted, "12 out of 28 engines were deemed to have failed the prescribed durability test."

The CRC released a follow-up report to the engine durability study, titled *Durability of Fuel Pumps and Fuel Level Senders in Neat and Aggressive E15* last January.[5] The study assessed the impact of E15 on the performance and durability of fuel pumps and fuel level senders, and concluded that while some fuel systems survived testing on E15, others experienced complete failures that would prevent operation. Additionally, the study noted that the fuel pumps

[4] Coordinating Research Council, *Intermediate-Level Ethanol Blends Engine Durability Study*, April 2012. Accessible at: http://www.crcao.com/reports/recentstudies2012/CM-136-09-1B%20Engine%20Durability/CRC%20CM-136-09-1B%20Final%20Report.pdf

[5] Coordinating Research Council, *Durability of Fuel Pumps and Fuel Level Senders in Neat and Aggressive E15*, January 2013. Accessible at: http://www.crcao.com/reports/recentstudies2013/CRC%20664%20%5BAVFL-15a%5D/AVFL%2015a%20%5BCRC%20664%5D%20Final%20Report%20only.pdf

and level senders that "failed or exhibited other effects during testing…are used on a substantial number of the 29 million 2001-2007 model year vehicles…"

Warranty Issues

Given the potential for E15 to negatively impact engines, concerns have been raised and questions asked regarding warranty coverage for use of the fuel. Several manufacturers, including BMW, Nissan, Chrysler, Toyota, and Volkswagen, have stated their warranties will not cover fuel-related claims caused by the use of E15. Additionally, eight automakers, including GM, Ford, Honda, Hyundai, Kia, Mazda, Mercedes-Benz, and Volvo, have indicated that use of E15 does not comply with the fuel requirements in their owner's manual, and may invalidate or void warranty coverage.[6]

In June 2011, Rep. Sensenbrenner sent letters to 14 automobile manufacturers inquiring as to the relationship between vehicle damage resulting from the use of E15 and vehicle warranties.[7] Specifically, the letters asked three questions: (1) Will E15 damage engines of Model Year 2001 and later? (2) Will your warranties cover damage from E15? And (3) Will E15 negatively affect fuel efficiency. All 14 companies responded with letters outlining their concerns with E15 use and affirmed the potential for E15 to negatively impact their vehicles and cause engine damage. Furthermore, the manufacturers indicated that their vehicle fleets were not designed to operate on E15, and stated that the warranties would not cover damage resulting from E15. as of January 2013, only Ford and General Motors have certified their Model Year 2013 lines for use with E15.

Legislative Summary and History

In the 112th Congress, the Science, Space, and Technology Committee passed H.R. 3199, authored by Rep. Sensenbrenner. This legislation required that a comprehensive assessment of the scientific and technical research on the implications of the use of mid-level ethanol blends be conducted prior to the implementation of any waiver decision for E15. The bill directed the EPA Administrator, acting through the Assistant Administrator of the Office of Research and Development, to enter into an agreement with the National Academy of Science (NAS) to provide such an assessment.

The NAS assessment would provide a comparison of mid-level ethanol blends to gasoline blends containing both ten percent (E10) and zero percent ethanol. Other components of the

[6] American Automobile Association, *New E15 Gasoline May Damage Vehicles and Cause Consumer Confusion*, November 30, 2012. Accessible at: http://newsroom.aaa.com/2012/11/new-e15-gasoline-may-damage-vehicles-and-cause-consumer-confusion/

[7] Rep. Sensenbrenner to Lisa Jackson, U.S. Environmental Protection Agency, July 5, 2011. http://sensenbrenner.house.gov/uploadedfiles/e15_auto_responses.pdf

assessment would include: (1) an evaluation of both short-term and long-term environmental, safety, durability, and performance effects of the introduction of mid-level ethanol blends on onroad, nonroad, and marine engines, onroad and nonroad vehicles, and related equipment; and (2) an identification of gaps in research and understanding related to numerous issues. The assessment would also identify areas of research, development, and testing necessary to: (1) ensure that existing motor fuel infrastructure is not adversely impacted by mid-level ethanol blends, and (2) reduce the risk of misfueling by users at various points of the distribution and supply chain.

Additional Reading:

- Hearing Charter: *Conflicts and Unintended Consequences of Motor Fuels Standards*, Subcommittee on Energy and Environment, Committee on Science, Space, and Technology. November 2, 2011.
- Hearing Charter: *Hitting the Ethanol Blend Wall: Examining the Science on E15*, Subcommittee on Energy and Environment, Committee on Science, Space, and Technology. July 7, 2011.
- National Academies of Science report, *Renewable Fuel Standard: Potential Economic and Environmental Effects of U.S. Biofuel Policy*, October 2011.

Discussion Draft
Section-by-Section Analysis

Purpose: To provide for a comprehensive assessment of the scientific and technical research on the implications of the use of mid-level ethanol blends, and for other purposes.

Section 1: Definitions

Section 1 provides definitions, including: "Administrator" and "Mid-Level Ethanol Blend."

Section 2: Evaluation

Section 2 (a) requires the Administrator, acting through the Assistant Administrator of the Office of Research and Development at the Environmental Protection Agency to: (1) enter into an agreement with the National Academies of Sciences to provide a comprehensive assessment of the scientific and technical research on the implication of the use of mid-level ethanol blends, including a comparison of mid-level ethanol blends to gasoline containing ten percent or zero percent ethanol; and (2) transmit the report to the Committee on Science, Space and Technology and the Committee on Environment and Public Works within thirty days of receiving the results, along with the disagreement or agreement of the Administrator with the findings.

Section 2 (b) invalidates any waiver granted by the Agency prior to enactment under section 211 (f) (4) of the Clean Air Act that allows the introduction into commerce of mid-level ethanol blends. The Administrator is prohibited from granting new waivers under section 211 (f) (4) until after the submission of the report described in subsection (a) (2).

Section 2 (c) requires the assessment performed under subsection (a) include:
(1) an evaluation of the short and long-term environmental, safety, durability, and performance effects of the introduction of mid-level ethanol blends on onroad, nonroad, and marine engines, vehicles, and related equipment. The evaluation shall also include consideration of the impacts of qualifying mid-level ethanol blends or blends with higher ethanol concentration as a certification fuel, and a review of all available scientific evidence, including all relevant government and industry data and testing, including that which was relied upon by the Administrator and published in the federal register. Additionally, the study shall identify gaps in understanding and research needs related to

(A) tailpipe emissions; (B) evaporative systems; (C) engine and fuel system durability; (D) onboard diagnostics; (E) emissions inventory and other modeling effects; (F) materials compatibility; (G) operability and drivability; (H) fuel efficiency; (J) consumer education and satisfaction; (K) cost-effectiveness for the consumer; (L) catalyst durability; and (M) durability of storage tanks, piping, and dispensers for retail.

The study shall also include: (2) An identification of areas of research, development, and testing necessary to (A) ensure that existing motor fuel infrastructure is not adversely impacted by mid-level ethanol blends; and (B) reduce the risk of misfueling by users at various points in the distribution and supply chain by: (i) assessing the best methods and practices to prevent misfueling; (ii) examining misfueling mitigation strategies for blender pumps; (iii) assessing the adequacy and ability of misfueling mitigations plans approved by EPA; and (iv) examining the technical standards and recommendation of the National Institute of Standards and Technology, the American National Standards Institute, and the International Organization for Standardization regarding fuel pump labeling.

Section 3: Authorization of Appropriations

Section 3 requires the Administrator utilize up to $900,000 from the funds made available for science and technology, including research and development activities, at the Environmental Protection Agency to carry out this Act.

Chairman STEWART. The Subcommittee on Environment will come to order. Good afternoon, everyone. Welcome to today's hearing entitled, "Mid-Level Ethanol Blends: Consumer and Technical Research Needs."

Before we begin, I would like to take this opportunity to thank my esteemed colleague, Dr. Andy Harris, for his service to the Committee and to his leadership as Chairman of the Environment Subcommittee. We congratulate him on his appointment to the House Appropriations Committee but regret the loss of an active Member of this Committee. We thank him for his leadership and wish him the very best of luck in his new committee assignment.

I am Chris Stewart. I am the Vice Chairman of this Subcommittee. I have been asked to pinch hit for Dr. Harris in his absence and hopefully we can stumble through this without too many incidents. I appreciate the presence of the witnesses with us today as well as other Members of the Subcommittee.

In front of you are packets containing the written testimony, the biographies, and the truth in testimony disclosures for today's witnesses.

I know recognize myself for five minutes for an opening statement.

Welcome to this afternoon's hearing of the Environment Subcommittee entitled, "Mid-Level Ethanol Blends: Consumer and Technical Research Needs."

This legislation hearing builds upon work of this Committee pursued last Congress involving technical aspects of the Environmental Protection Agency's approval of mid-level ethanol blends for use in certain vehicles. Relying on a single set of narrow tests, EPA approved fuel with up to 15 percent ethanol, known as E15, for use in 2001, model year and newer passenger vehicles. Concurrently, and for the first time in the history of the Clean Air Act, EPA conducted a bifurcated fuel system, prohibiting E15 use in all other engines and vehicles.

Unfortunately, the more E15 is studied, the more concerns are identified. In addition to potential widespread impacts on vehicle engines, EPA has led a haphazard transition to E15 usage, marked by regulatory confusion, bungled implementation, and a lack of consumer education. Today's hearing is not a forum to discuss whether corn ethanol is good or bad, but rather it is designed to answer questions like: What have we learned about the effects of E15 since 2010? What types of research would be helpful before there is more widespread use throughout the United States? And finally, what types of research and development should be required ahead of the introduction of new fuels in the future?

Toward answering these questions, our witnesses will be commenting on discussion draft legislation in your packets. This bill would require that EPA contract with the National Academy of Sciences to assess the state of the science regarding E15, including research needs, gaps in understanding, recent testing, and consumer education efforts. This draft is substantially similar to H.R. 3199, bipartisan legislation co-sponsored by Congressman Sensenbrenner and passed overwhelmingly by the full Science, Space, and Technology Committee last year.

That legislation was also endorsed by a diverse coalition of groups concerned about EPA's E15 science, including everyone from the Friends of the Earth and the National Turkey Federation to the American Petroleum Institute and Alliance of Automobile Manufacturers. For example, the now-President of the Environmental Working Group testified to this Subcommittee last Congress that, "Our comprehensive review of the available scientific data indicates that E15 and higher ethanol blends could have significant adverse impacts on human and environmental health."

This hearing is focused on technical and consumer concerns about the potential engine damage, warranty issues, and misfueling associated with EPA's approval of a bifurcated fueling system. The Clean Air Act does not allow a waiver for a new fuel if it would result in the failure of emission standards in cars manufactured after 1974. Recent research has found major problems resulting from the use of mid-level ethanol blends. This research has identified negative impacts to the engine durability, on-board diagnostics, fuel pumps, as well as non-road marine, outdoor power equipment, and snowmobile engines. Additional research has shown that consumers are completely unaware of this dramatic change, a 50 percent increase in the amount of ethanol per gallon, in the fuel they are putting in their vehicles and engines.

Earlier this month, the National Marine Manufacturers Association conducted a survey that found of the 17 stations currently registered to sell E15 in a handful of States, six of those stations, fully 35 percent, had failed to label the pumps according to EPA's requirements. Confusion over misfueling has been magnified by the agency's handling of blender pumps and non-approved vehicles. At one point last year, EPA even proposed a completely impractical and unenforceable mandate that all customers would have to buy at least four gallons from any E15 blender pump. This is not promising for the widespread adoption of this fuel, especially as the vast majority of vehicles and engines in America are either not approved for the use of E15 or may have their warranties voided by its use.

While EPA's Assistant Administrator Gina McCarthy has repeatedly stated that the agency is not currently requiring the use of E15, the agency has aggressively supported the Renewable Fuel Standard, the underlying mandate that will undeniably, at some point in the future, have to force fuel ethanol blends to exceed 10 percent. And to be clear, RFS further guarantees that E15 is just the tip of the iceberg. RFS mandates 16 billion gallons of renewable fuel be blended for the sale in 2013. Over the next 10 years, this requirement will grow to 36 billion gallons.

This policy is looking more and more like a monument of the folly of central energy planning and has entailed negative environmental outcomes, rising food costs here in the United States and in third world countries, and even outright fraud involving biofuel credits. This absurdity was demonstrated late last week when Ms. McCarthy, reportedly expected to be nominated for EPA Administrator, expressed excitement at her "personal milestone," that the first credit for cellulosic ethanol had just been issued. What she failed to mention is that her agency had mandated 8.65 million gal-

lons of this phantom fuel be paid for by consumers in 2012, even though virtually none existed.

To reiterate, this hearing will not examine the RFS, but rather focus on its downstream impacts related to the technical and consumer research needed on the effects of E15 on all engines, as well as explore a potential path forward that is based on science and expert testing, not on politics. As our witnesses today will testify, there is increasing evidence that American consumers may have to pay the price for EPA's cart-before-the-horse approach to E15 science.

[The prepared statement of Mr. Stewart follows:]

PREPARED STATEMENT OF SUBCOMMITTEE CHAIRMAN CHRIS STEWART

Welcome to this afternoon's hearing of the Environment Subcommittee entitled "Mid-Level Ethanol Blends: Consumer and Technical Research Needs."

This legislative hearing builds upon work this Committee pursued last Congress involving technical aspects of the Environmental Protection Agency's approval of mid-level ethanol blends for use in certain vehicles. Relying on a single set of narrow tests, EPA approved fuel with up to 15 percent ethanol—known as E15—for use in 2001 model-year and newer passenger vehicles. Concurrently, and for the first time in the history of the *Clean Air Act*, EPA created a birfurcated fuel system, prohibiting E15 use in all other engines and vehicles.

Unfortunately, the more E15 is studied, the more concerns are identified. In addition to potential widespread impacts on vehicle engines, EPA has led a haphazard transition to E15 usage, marked by regulatory confusion, bungled implementation, and a lack of consumer education. Today's hearing is not a forum to discuss whether corn ethanol is good or bad; rather, it is designed to answer questions like: What have we learned about the effects of E15 since 2010? What types of research would be helpful before there is more widespread use throughout the United States? Finally, what types of research and development should be required ahead of the introduction of new fuels in the future?

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While EPA's Assistant Administrator Gina McCarthy has repeatedly stated that the Agency is not currently requiring the use of E15, the Agency aggressively supports the Renewable Fuel Standard—the underlying mandate that will, undeniably, at some point in the future have to force fuel ethanol blends to exceed 10 percent. And to be clear—the RFS further guarantees that E15 is just the tip of the iceberg. The RFS mandates 16 billion gallons of renewable fuel be blended for sale in 2013. Over the next 10 years, this requirment will grow to 36 billion gallons.

This policy is looking more and more like a monument to the folly of central energy planning, and has entailed negative environmental outcomes, rising food costs here in the United States and in third-world countries, and even outright fraud involving biofuel credits. This absurdity was demonstrated late last week, when Ms McCarthy—reportedly expected to be nominated for EPA Administrator—expressed excitement at her "personal milestone" that the first credit for cellulosic ethanol had just been issued. What she failed to mention is that her Agency had mandated 8.65 million gallons of this phantom fuel be paid for by consumers in 2012, even though virtually none existed.

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Chairman STEWART. I would now like to recognize the Ranking Member, the gentlewoman from Oregon, Ms. Bonamici, for an opening statement.

Ms. BONAMICI. Thank you very much, Chairman Stewart.

Renewable fuel from biomass, specifically corn-based ethanol, is a complex issue, and as this hearing demonstrates, the ethanol content in our Nation's fuel supply has been the subject of much debate. In this Committee, we often cover policy areas about which there is disagreement in basic ideology and world view.

But when we are faced with issues on which there is agreement, we should recognize that and work toward consensus solutions.

For example, the Renewable Fuels Standard was first included in an energy bill that passed the House and the Senate with bipartisan support. That is a statement we don't say frequently enough. One thing that many of us do say frequently is that we need to put this Nation on a path toward energy independence. Our reliance on foreign oil causes concerns in every sector, businesses and consumers worry about constantly fluctuating prices at the pump, our generals see a strategic disadvantage to relying on resources provided by countries with which we have experienced significant conflict, and many of our constituents rightly worry that continuing our current use of fossil fuels will harm our fragile environment.

The Renewable Fuel Standard represents a bipartisan acknowledgement of the role that alternative fuels play in reducing our dependence on foreign oil. From my time in the Oregon legislature, I know well the concerns that some have about blend levels in gasoline, and I know that various States have made exceptions to accommodate these concerns. It makes sense to fully understand the impacts of our renewable policies before requiring consumers to comply.

What does not make sense, however, is refusing to address the problem altogether. The blend wall should not be a reason to give up on renewable fuels. It should be a reason to promote technology that will meet the growing supply of renewables. Advanced eth-

anol, cellulosic biomass, and developments in these fields are only going to increase the supply of blended fuels in the market, and these advancements will help us bring—come further toward energy security.

This hearing is supposed to examine, among other things, scientific, technical, and consumer impacts of EPA's decision to allow introduction by waiver of E15 in the market, and that is to allow, not to require. And we will also take comments on a draft bill that Mr. Sensenbrenner is circulating that would prevent the EPA from complying with its Congressionally mandated responsibilities under the Clean Air Act until additional research is performed on E15.

The Department of Energy conducted much of the science that the EPA used in making its waiver decision. Although I agree that the EPA should not base decisions on incomplete information, neither should this Committee. I am concerned that in the hearing charter and in the witness testimony, the main literature that is being used to refute the EPA's science on E15 is being provided by a group that is largely financed by the American Petroleum Institute and several automobile manufacturers

In a Committee where science is paramount, I find it perplexing that the scientific studies we are discussing were largely funded by the oil industry, which has an obvious financial stake in the outcome, and this context is also worth pointing out at the outset that following the release of the study from the Coordinating Research Council, the Department of Energy did release a response questioning the methodology of the research.

Clean and sustainable renewable fuels are already part of our economy. Investing in clean and renewable energy has and will continue to create jobs, reduce our impact on climate change, reduce our reliance on foreign fossil fuels, and strengthen our national security. We should work toward realizing a future of producing home-grown renewable fuels, and to meet that challenge, it is this Committee's responsibility to focus on the science and technology that will help get our country on the road to a sustainable energy future.

With that, I look forward to all of the witnesses' testimony and to what I hope will be a productive discussion about the scientific and technological implications of alternative fuels.

Thank you, Mr. Chairman, and I yield back.

[The prepared statement of Ms. Bonamici follows:]

PREPARED STATEMENT OF SUBCOMMITTEE RANKING MEMBER SUZANNE BONAMICI

Thank you, Chairman Stewart. Renewable fuel from biomass, specifically corn-based ethanol, is a complex issue. And, as this hearing demonstrates, the ethanol content in our Nation's fuel supply has been the subject of much debate.

In this Committee, we often cover policy areas about which there is disagreement in basic ideology and world view. But when we are faced with issues on which there is agreement, we should recognize that and work toward consensus solutions. For example, the Renewable Fuels Standard was first included in an energy bill that passed the House and Senate with bipartisan support. That is a statement we don't say frequently enough.

One thing that many of us do say frequently is that we need to put this Nation on a path toward energy independence. Our reliance on foreign oil causes concern in every sector. Businesses and consumers worry about constantly fluctuating prices at the pump. Our Generals see a strategic disadvantage to relying on resources provided by countries with which we have experienced significant conflict. And many

of our constituents rightly worry that continuing our current use of fossil fuels will harm our fragile environment.

The Renewable Fuels Standard (RFS) represents a bipartisan acknowledgment of the role that alternative fuels play in reducing our dependence on foreign oil. From my time in the Oregon legislature, I know the concerns that some have about blend levels in gasoline, and I know that various States have made exceptions to accommodate these concerns. It makes sense to fully understand the impacts of our renewable policies before requiring consumers to comply. What does *not* make sense, however, is refusing to address the problem altogether. The "blend wall' should not be a reason to give up on renewable fuels; it should be a reason to promote technology that will meeet the growing supply of renewables. Advanced ethanol, cellulosic biomass, developments in these fuels are only going to increase the supply of blended fuels on the market. Those advancements will help bring us further toward energy security.

This hearing is supposed to examine—among other things—scientific, technical, and consumer impacts of EPA's decision to allow introduction of E15 in the market. And we will also take comments on a draft bill that Mr. Sensenbrenner is circulating that would prevent the EPA from complying with its Congressionally mandated responsibilities under the *Clean Air Act* until additional research is performed on E15.

The Department of Energy conducted much of the science that the EPA used in making its waiver decision. Although I agree that the EPA should not base decisions on incomplete information, neither should this Committee. I am concerned that in the Hearing Charter and in the witness testimony, the main literature that is being used to refute the EPA's science on E15 is being provided by a group that is largely financed by the American Petroleum Institute and several automobile manufacturers. In a Committee where science is paramount, I find it perplexing that the scientific studies we are discussing were largely funded by the oil industry, which has an obvious financial stake in the outcome of this debate.

Also, because the Department of Energy conducted the research on which the EPA based its decision, it is important to note for the record that the Majority invited neither the Department of Energy nor the Environmental Protection Agency to discuss the science and extensive testing on which EPS based its decision.

Clean and sustainable renewable fuels are already a part of our economy. Investing in clean and renewable energy has and will continue to create jobs, reduce our impact on climate change, reduce our reliance on foreign fossil fuels, and strengthen our national security. We should work toward realizing a future of producing homegrown renewable fuels. To meet that challenge, it is this Committee's responsibility to focus on the science and technology that will help get our country on the road to a sustainable energy future.

With that, I look forward to all of the witnesses' testimony and to what I hope will be a productive discussion about the scientific and technological implications of alternative fuels.

Chairman STEWART. Thank you, Ms. Bonamici.

If there are other Members who wish to submit additional opening statements, your statements will be added to the record at this point.

At this time I would like to introduce the witnesses.

Our first witness is Mr. Robert L. Darbelnet, the President and CEO of American Automobile Association, known to most of us as AAA. Mr. Darbelnet has become AAA President and CEO in November 1994, after serving 11 years as CEO of the Canadian Automobile Association in Quebec. He currently serves as Chairman of the Global Mobility Alliance and Trustee of the AAA Foundation for Traffic Safety.

Our next witness is the Honorable Wayne Allard, Vice President of Government Relations for the American Motorcyclist Association, or AMA. He previously served from 1997 to 2009 as a U.S. Senator for the State of Colorado. Senator Allard served as the Ranking Member of the Interior Subcommittee of the Senate Appropriations Committee. Before that, Senator Allard was a Member of the U.S. House of Representatives from 1991 to 1997.

And the final witness today is Mr. Mike Leister, a member of the Board of the Directors of the Coordinating Research Council. He chairs the American Petroleum Institute Fuels Subcommittee and is a member of the API Economics Work Group and belongs to the American Fuels and Petrochemical Manufacturers Fuels Advisory Subcommittee. Mr. Leister has a Master's of Science in chemical engineering and a Master's of Business Administration.

As our witnesses should know, spoken testimony is limited to five minutes each, after which the Members of the Committee will have five minutes each to ask questions.

I would now like to recognize Mr. Darbelnet for five minutes to present his testimony.

STATEMENT OF MR. ROBERT L. DARBELNET,
PRESIDENT AND CEO,
AMERICAN AUTOMOBILE ASSOCIATION

Mr. DARBELNET. Thank you very much, Mr. Chairman. It is a pleasure to be here on behalf of AAA to share our views on this issue. I realize that you and your colleagues often deal with extremely complex questions, but the subject matter before us today is really quite simple, and that is that allowing the sale of E15 at this point in time is premature and irresponsible.

In our view, there are three prerequisites for the introduction of a new fuel. The first one is adequate testing to ensure that the product that is being brought to market is safe. In this instance, that has not occurred. Granted, the EPA has conducted extensive testing, but the focus of that testing has been on the impact of E15 on emission controls, not on the broader effect of the product on the engine itself.

Industry testing reveals true and genuine concerns, and you will hear more about that later this afternoon, but clearly from our research or our review of the research, I should say, premature engine wear, potential fuel pump failures, and a series of other less-significant consequences can occur if this fuel is used in vehicles that were manufactured more recently than last year. Even the Renewable Fuel Association advises retailers to beware of the dangers and the damage that can result from putting E15 in underground storage systems. They speak of possible leaks and fires. Clearly there is something here.

The second requirement, in our view, for introducing a new fuel to market is coordination between regulators, fuel retailers, and auto manufacturers. Now, the record is clear in that that has not occurred. A number of the retailers in this country are opposed to the sale of E15 and at the present time do not intend to bring it to market. Virtually every OEM or auto manufacturer in this country has indicated that using E15 in vehicles that were manufactured more recently than last year, with the exception of Porsches, will tell you that you could use it in a vehicle that is older than that, virtually all of the OEMs have said do not put this fuel in your tank unless you are accepting of the fact that it will void your warranty.

And the third requirement for introducing a new product is outreach to consumers to mitigate the risk of misfueling, and that

hasn't occurred either. Again, the record is clear. We conducted research recently that shows that 95 percent, 95 percent of the motoring public in this country does not know what E15 is, let alone whether they should be putting it in the tank of their vehicle.

And to further complicate matters, the EPA ceded to pressures to tone down the message on the warning label which, incidentally, is rather small and generally lost in all of the advertising which is on today's fuel pumps, but they agreed to tone down the message on that label from what was initially contemplated and would have started with the word "warning" to something less significant, in other words, "attention."

Now, I want to make clear the fact that AAA is not opposed to ethanol for automobiles. E10 is compatible with almost every vehicle on the road today. Automobiles, I should say, because you will hear from my colleagues that the same is not true for other types of vehicles. But for automobiles, E10 is safe. Our issue is not with ethanol. We see the benefit of reduced dependency on fossil fuel, we see the benefit of bringing to market alternative options for consumers.

However, as I said at the outset, the sale of E15 at this point in time is irresponsible, and it should cease until adequate testing allows regulators, retailers, and auto manufacturers to reconcile their viewpoints to agree on which vehicles can safely consume E15, and to make sure that the consumer is adequately informed of the risks that follow the use of E15 in today's automobiles.

Thank you very much.

[The prepared statement of Mr. Darbelnet follows:]

Written Testimony of
Robert L. Darbelnet

President and CEO

AAA

Before the U.S. House Committee on Science, Space and Technology

Subcommittee on Environment

Written Testimony on "Mid-Level Ethanol Blends: Consumer and Technical Research Needs"

February 26, 2013

Thank you, Chairman Harris and Ranking Member Bonamici, for the opportunity to testify at today's hearing. My name is Bob Darbelnet, and I am the president and CEO of AAA.

AAA is a not-for-profit, fully taxpaying federation of motor clubs in the U.S. and Canada. AAA provides more than 53 million members with travel, insurance, financial and automotive-related services. Since its founding in 1902, AAA has been a leader and advocate for the safety and mobility of all travelers.

Our advocacy ranges from issues as diverse as distracted driving and teen driver safety, to tracking retail gasoline prices, to forecasting holiday travel patterns, to partnering with regulators to develop and implement more consumer-friendly fuel economy labels. We believe that consumer protection and education, supported by clear and thoughtful research, is not just a priority, it is an obligation.

The introduction of E15 gasoline to consumers has failed to meet this obligation.

In November of last year – several months after E15 was first sold to motorists – a AAA survey found that 95 percent of consumers had never heard of the fuel. Additionally, despite the Environmental Protection Agency (EPA) waiver, allowing the use of E15 gasoline in model year 2001 and newer vehicles, we learned that far fewer vehicles – a scant five percent – were actually approved for use under warranty by their manufacturer. Most alarmingly, this new fuel entered the market without adequate protections to prevent misfuelings and despite remaining questions about potential vehicle damage, even

for EPA-approved 2001 and newer vehicles. For these reasons, AAA called on the EPA and retailers to suspend the sale of E15 until motorists were better protected.

As the Committee is aware, the EPA was first petitioned in 2009 to allow the sale of E15. Since that initial request, AAA has worked extensively with the Agency to ensure that the fuel blend would only be sold to motorists if it could be done in a way that did not put them at risk. Despite evidence that drivers are not aware of the fuel and could be unknowingly putting their cars in jeopardy, a handful of gas stations in Nebraska, Iowa and Kansas are selling this fuel, and there is a strong likelihood that retailers will sell E15 in additional states soon unless immediate action is taken to protect consumers. To understand what steps are necessary to correct the current lack of protection and education, it is essential to understand the process necessary for the successful introduction of any new fuel.

In our view, the first step for a new fuel being introduced to market is thorough and thoughtful testing of how it will impact consumers and their vehicles. This should include research that looks at the full impact of fuel use on emissions, fuel systems, drivability, fuel efficiency and retail distribution to motorists. The fuel should not be approved for use in any vehicle or equipment that is not proven appropriate.

Next, it is critical to implement consumer education efforts to ensure that the new product is only used as directed. This includes sufficient steps to prevent misfuelings, including, but not limited to, consumer protections at the pump and education efforts to ensure motorists are fully aware of the fuel they are using in their vehicle. The importance of these steps only increases in the event of a partial waiver, where there is significantly greater potential for motorist confusion and misfueling.

Finally, it is vital for regulators to work closely with industry stakeholders to ensure that manufacturers support federally-approved fuels marketed as safe to consumers. This is an essential final step to prevent motorists from unknowingly using a fuel their vehicle's manufacturer does not deem safe and that could potentially void their warranty and leave them liable for costly repairs.

E15 has been introduced into the market without the successful completion of any of these necessary steps.

Supporters of E15 rightly note that the Department of Energy (DOE) rigorously tested the fuel for exhaust emissions and components. This is consistent with the EPA's mission. It was however neither the rigor nor the duration of this testing that fell short, it was the scope of impact that these tests were designed to capture. After reviewing this research, along with other studies that have been conducted, AAA's automotive experts have concerns about reduced engine life and fuel pump failure from E15 use — factors that DOE testing was not structured to measure.

AAA would support E15 gasoline coming to market, but only following complete and conclusive testing demonstrating it was safe for approved vehicles and once necessary consumer awareness and protections were put in place. Testing by the National Academy of Sciences, which would be required by the legislation being discussed today, would be an important first step in resolving some of the outstanding questions about the impact of E15 use.

Consumer education efforts to date and safeguards at the pump are also severely lacking. As previously discussed, AAA found that more than 95% of consumers have not heard of E15. In the best of circumstances, when filling up at a pump that dispenses the fuel, motorists have only a 3 and 5/8 inches

wide by 3 and 1/8 inches high label (attached) to warn that they may be using a new product not designed for use in their vehicle. As AAA noted in our public comments submitted to the EPA in 2011, this label alone is insufficient. It is easily overlooked by motorists among the other stickers and signage on the pump and the final version is a watered-down and less attention-grabbing version of the initial label proposed by the EPA. The risk is only more alarming considering a recent survey cited by the National Marine Manufacturers Association that found 35 percent of the current registered sellers of E15 — six of the 18 registered program sites — had not even bothered to label the pump at all. This combination of uninformed consumers and insufficient identification at the pump puts motorists at unnecessary and unacceptable risk and is a recipe for misfuelings and vehicle damage.

Finally, both the EPA and the Renewable Fuel Association (a vocal supporter of E15's approval), agree that "it may be necessary for consumers to consult their vehicle manufacturer's website or an authorized dealership, to determine recommendations on the use of E15 in their vehicle." AAA took the guesswork out of that recommendation and checked. Automakers have approved less than 5% of cars on the road to use E15.

This leaves a substantial gap between the limited number of vehicles that automakers will cover and the slightly more than 50% of vehicles the EPA has approved to use the fuel. This sort of conflicting information confuses motorists, and AAA believes it is both premature and irresponsible to sell E15 to consumers while these issues remain unresolved.

While supporters publically and vocally deny and dismiss the potential damage to motorists' vehicles and fueling infrastructure that E15 may cause, these same groups do admit that higher ethanol blends may cause damage when it suits their business interests.

In a USA Today article in November 2012, Bob Dinneen, CEO of the Renewable Fuel Association (RFA), stated "there are no corrosive issues with E15. If there's an issue with E15 (damaging vehicles) we're going to know about it." This statement is in stark contrast to the RFA's own "E15 Retailer Handbook," which clearly outlines potential issues with the fuel. The handbook not only advises retailers that "some Underground Storage Tank systems and related underground equipment may not be compatible with E15 blends" but also cites the Underwriters Laboratories' warning that "some equipment, both new and used… demonstrated limited ability to safely accommodate exposure to fuels such as E15."

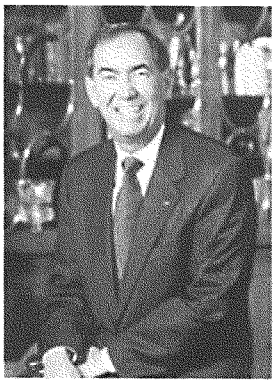
Perhaps most alarmingly, the renewable fuels industry testified before Congress in support of the Domestic Fuels Protection Act. This legislation was appropriately named in that it provided blanket liability protections to fuel producers, while providing no protections to motorists. If these proponents of higher ethanol blends aren't confident enough to take responsibility for the risks of E15, it is not just inappropriate but inexcusable that the risk be passed on to unsuspecting consumers.

Some groups have chosen to misrepresent AAA's position and the reasons that we have called for E15 sales to be suspended, rather than discuss the material concerns we have raised on behalf of motorists. AAA is not opposed to ethanol. We are concerned with the way that this one particular blend has been brought to market and is being sold to consumers. AAA believes that ethanol blended fuels have the potential to provide drivers with a welcome choice at the pump that supports American jobs, promotes American energy independence and can save Americans money. In order to realize these benefits, it is imperative that increased ethanol blends are only brought to market when consumers have been clearly

informed and protected. AAA would support a motorists' right to choose E15 but not until the impact on vehicles is clear and only once basic thresholds of consumer education and protection have been met.

With this goal in mind, AAA has called on regulators and industry to suspend the sale of E15 until motorists are better protected. We welcome the Committee's support in achieving this goal.

Thank you again to the Committee for the opportunity to testify here today and I look forward to your questions.



ROBERT L. DARBELNET – AAA, PRESIDENT AND CEO
APPOINTED TO THE AAA BOARD OF DIRECTORS IN 2005.

Robert L. Darbelnet is president and CEO of AAA, a not-for-profit federation of 50 motor clubs that serves more than 53 million members in the United States and Canada.

Darbelnet became AAA president and CEO in November 1994, after serving 11 years as CEO of CAA-Quebec. He began his AAA career as an emergency road service driver for the Quebec Automobile Club in 1973.

Darbelnet is a past Chairman of ITS America and the Alliance Internationale de Tourisme (AIT) based in Geneva. He served as Deputy President for Mobility of the FIA (Fédération Internationale de l'Automobile) from 2001 to 2005, as an elected member of the FIA Senate from 1997 to 2005, as President of FIA Region III from 2005 to 2009 and as Trustee of the FIA Foundation from 2003 to 2011. Darbelnet currently serves as Chairman of the Global Mobility Alliance and trustee of the AAA Foundation for Traffic Safety.

Darbelnet is a graduate of Sainte-Foy College and Laval University in Quebec City.

Chairman STEWART. Thank you, sir.

I now recognize Senator Allard for five minutes for his testimony.

STATEMENT OF HON. WAYNE ALLARD,
VICE PRESIDENT, GOVERNMENT RELATIONS,
AMERICAN MOTORCYCLIST ASSOCIATION

Mr. ALLARD. Thank you, Mr. Chairman, and I want to congratulate you on Chairing your first Committee.

Chairman STEWART. Thank you. It is really quite exciting.

Mr. ALLARD. Acting Chairman Chris Stewart and Ranking Member Suzanne Bonamici and Members of the Subcommittee, thank you for the opportunity to provide comment on "Mid-Level Ethanol Blends: Consumer and Technical Research Needs."

I was in public office for 26 years, but I still shake my head over the ability of the Federal Government to reach, or maybe I should say overreach, into the lives of the American people and the power wielded by bureaucrats to do so.

One case in point is E15, a gasoline formulation that contains up to 15 percent ethanol by volume, which could damage motorcycle and all-terrain vehicle engines.

The American Motorcyclist Association believes extensive, independent testing needs to be done before E15 becomes more widely available. The key for the AMA and our members is that E15 must be proven safe for motorcycle and ATV engines. To the best of our knowledge, E15 is not approved for use in any original-equipment motorcycles or ATVs, and in fact, its use can void many manufacturer's warranties.

As of today, the U.S. Environmental Protection Agency has only approved the use of E15 in model year 2001, and newer cars, light-duty trucks, and medium-duty passenger vehicles. This list does not include motorcycles or ATVs.

How is the Federal Government going to prevent motorcyclists from inadvertently putting E15 in our gas tanks or gas cans when getting gas at a blender pump with a single hose?

Here is what the EPA—here is where the EPA overreached. Initially, the EPA decided that you must buy at least four gallons of gas from that blender pump. Not one gallon, not two gallons, not three gallons. Yes, the government mandated you buy at least four gallons to dilute the residual E15 in the hose.

The EPA revealed the four-gallon minimum mandate to the AMA in a letter last August responding to AMA concerns that E15 could be put in motorcycle and ATV gas tanks inadvertently when consumers use blender pumps. Unlike an automobile or SUV that has a large fuel tank, the residual fuel left in a fueling hose could be detrimental to the performance of motorcycle or ATV engines due to the small size of their fuel tanks and the higher concentration of ethanol that would, therefore, be present in the fuel.

In addition, the use of E15 will lower fuel efficiency and possibly cause premature engine failure. In off-road engines, the effect can even be dangerous for users.

Another problem with that new EPA policy is that not all motorcycle and ATV gas tanks hold four gallons or more gallons. Not only did we find it unacceptable for the EPA to mandate that ev-

eryone, including our members, buy minimum amounts of gas, but that the EPA answer simply would not work because of the sizes of many motorcycle and ATV gas tanks and the fact that off-highway riders take containers of gas with them on their trips. Most times these containers are much smaller than four gallons.

We stress that the EPA needed to come up with a better solution, so on February 7, in response to concerns expressed by the AMA and power equipment makers, the EPA issued new guidelines to help ensure that motorcyclists and others don't inadvertently use E15 fuel.

Under the new option, retailers who use a blender pump to see E15 and E10 fuel through the same hose must also have a separate E10/E0 fuel pump. Those retailers would be required to have a label on the blender pump that reads passenger vehicles only. Use in other vehicles, engines, and equipment may violate federal law.

Retailers would also be required to have signs indicating the location of the dedicated E10 or lower fuel pump. There would be no minimum fuel purchase requirement at that pump.

Now, we can only imagine how many motorists and motorcyclists will be lining up at that single pump to get E10 or lower fuel. Retailers who want to sell E15 also have the option of having a dedicated E15 pump or hose or a pump that dispenses E15 and higher ethanol blends through a single hose. If a blender pump dispenses multiple fuels that include E15 and higher ethanol blends, the EPA may require a minimum purchase requirement.

The AMA has repeatedly expressed concerns to government officials and federal lawmakers about possible damage to motorcycle and ATV engines caused by the inadvertent use of E15 when the new fuel becomes widely available. The AMA has also asked that motorcycles and ATVs be part of any scientific study into the effects of E15 to ensure that the new fuel blend would not damage those engines.

It is my sincere hope that this Subcommittee continues to be proactive on this important issue affecting motorcyclists and ATV riders. The AMA and its members stand ready to serve as a resource for you and your staff as you further deliberate making our Nation's fuel supply safer for all users.

Again, I wish to thank the Chairman, the Ranking Member, and the Subcommittee for holding this legislative hearing on E15.

[The prepared statement of Mr. Allard follows:]

Statement of U.S. Sen. Wayne Allard
Vice President, Government Relations
American Motorcyclist Association

U.S. House of Representatives Subcommittee on Environment of the Committee on Science, Space, and Technology

Hearing on "Mid-Level Ethanol Blends: Consumer and Technical Research Needs"

February 26, 2013

Chairman Andy Harris, Ranking Member Suzanne Bonamici and members of the Subcommittee, thank you for the opportunity to provide comment on *Mid-Level Ethanol Blends: Consumer and Technical Research Needs*.

I was in public office for 26 years, but I still shake my head over the ability of the federal government to reach -- or overreach -- into the lives of the American people, and the power wielded by bureaucrats to do so.

One case in point is E15 -- a gasoline formulation that contains up to 15 percent ethanol by volume --which could damage motorcycle and all-terrain vehicle engines.

The American Motorcyclist Association believes extensive independent testing needs to be done before E15 becomes more widely available. The key for the AMA and our members is that E15 must be proven safe for motorcycle and ATV engines. To the best of our knowledge, E15 is not approved for use in any original-equipment motorcycles or ATVs. In fact, its use can void many manufacturers' warranties.

As of today, the U.S. Environmental Protection Agency has only approved the use of E15 in model year 2001 and newer cars, light-duty trucks and medium-duty passenger vehicles. This list does not include motorcycles or ATVs.

How is the federal government going to prevent motorcyclists from inadvertently putting E15 in their gas tanks or gas cans when getting gas at a "blender pump" with a single hose?

Here's where the EPA overreached.

Initially the EPA decided that you must buy at least four gallons of gas from that blender pump. Not one gallon. Not two gallons. Not even three gallons. Yes, the government mandated you buy at least four gallons to dilute the residual E15 in the hose.

The EPA revealed the four-gallon minimum mandate to the AMA in a letter last August responding to AMA concerns that E15 could be put in motorcycle and ATV gas tanks inadvertently when consumers use blender pumps.
Unlike an automobile or SUV that has a large fuel tank, the residual fuel left in a fueling hose could be detrimental to the performance of motorcycle or ATV engines due to the small size of their fuel tanks and the higher concentration of ethanol that would, therefore, be present in the fuel.

In addition, the use of E15 will lower fuel efficiency and possibly cause premature engine failure. In off-road engines, the effects can even be dangerous for users.

Another problem with that new EPA policy is that not all motorcycle and ATV gas tanks hold four or more gallons.

Not only did we find it unacceptable for the EPA to mandate that everyone -- including our members -- buy minimum amounts of gas, but the EPA answer simply would not work because of the sizes of many motorcycle and ATV gas tanks and the fact that off-highway riders take containers of gas with them on their trips, and most times those containers are much smaller than four gallons.

We stressed that the EPA needed to come up with a better solution.

So on Feb. 7, in response to concerns expressed by the AMA and power equipment makers, the EPA issued new guidelines to help ensure that motorcyclists and others don't inadvertently use E15 fuel.

Under the new option, retailers who use a blender pump to sell E15 and E10 fuel through the same hose must also have a separate E10/E0 fuel pump. Those retailers would be required to have a label on the blender pump that reads: "Passenger Vehicles Only. Use in Other Vehicles, Engines and Equipment May Violate Federal Law." Retailers would also be required to have signs indicating the location of the dedicated E10-or-lower fuel pump. There would be no minimum-fuel-purchase requirement at that pump.

We can only imagine how many motorists and motorcyclists will be lining up at that single pump to get E10-or-lower fuel.

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It is my sincere hope that this Subcommittee continues to be proactive on this important issue affecting motorcyclists and ATV riders. The AMA and its members stand ready to serve as a resource for you and your staff as you further deliberate making our nation's fuel supply safer for all users.

Again, I wish to thank the Chairman, the Ranking Member and the Subcommittee for holding this legislative hearing on E15.

Curriculum Vitae

Dr. Wayne Allard, D.V.M.

2757 Glebe Road #210

Arlington, Virginia 22206

February 21, 2013

I. Family
- A. He was born on December 2, 1943 at Fort Collins, Colorado to S. Jean Allard and Amos W Allard.
- B. He married Joan E Malcolm and they have 2 daughters: Christine and Cheryl.
- C. They have 7 grandkids: Colin, Christian and Colton (twins), Cody Johnson; Evan Smith; Abbie and Alex Doble.

II. Education
- A. Wayne and his wife Joan both graduated from Colorado State University. She received a degree in microbiology and he received a doctor of veterinary medicine degree. Dr. Allard is one of 45 veterinarians in the United States and Canada who was a charter member of the American Board of Veterinary Practitioners-Companion Animal.

III. Publications
- A. Professional
  1. "*Yersinia Tuberculosis* in Cats"
  2. "Skin Testing for Allergies in the Dog"
  3. "Mastocytosis in the Cat"
  4. "Lawn Burn from Dog Urine"
- B. Political articles and writings are numerous.
- C. Books published
  1. The Centennial State's U.S. Senators, 1876-2000.

IV. Memberships
- A. Charter Life Member of the Colorado State University Alumni Association
- B. Life Member of the Larimer County 4-H Club Foundation
- C. Charter Diplomat of the Board of Veterinary Practitioners. Now, an honorary member of the board.
- D. American Animal Hospital Association
- E. American Veterinary Medical Association
- F. University and Legislative Affairs Committee for the Colorado Veterinary Medical Association.
- G. Long Peak Veterinary Medical Association
- H. Larimer County Veterinary Medical Association
- I. Chairman Western Interstate Commission on Higher Education for Veterinary Medicine.
- J. Loveland Chamber of Commerce
- K. National Federation of Independent Businesses
- L. Honorary board member for Baker-Cotton University (Northeastern Junior College affiliate)
- M. Rotarian
- N. National Society of the Sons of the American Revolution
- O. Colorado Society of the Sons of the American Revolution
- P. Honorary Membership in the American-Scottish Military Society

V. Veterinary Career
- A. Started his own practice in Loveland in 1970, Part-time health officer for City of Loveland for 8 years and eventually eliminated his own position because of duplication with other agencies, practice grew to 10 employees; Wife, Joan was the bookkeeper, lab assistant, and part-time secretary; daughters also worked part-time in the practice
- B. Health Officer for the City of Loveland
- C. Founder and CEO of the Prion Research Institute.

VI. Employment
- A. 1952-1962 Worked in hay field of Allard Cattle Company owned by parents
- B. 1962-1967 Various summer jobs while attending Colorado State University

1. 1962- private contractor for bucking bales and harvesting corn
2. 19l63-Worked for Wildlife Service in Dillingham, Alaska and guarded the jail on a part time for the State Trooper.
3. 1964-Research assistant for Dr. Lechleitner involving prairie dogs and bubonic plague.
4. 1964-Tutored for 1 quarter chemistry
5. 1965-Kennel assistant and large animal assistant for Rankin Veterinary Clinic in Salem, Oregan.
6. 1967-Summer intern at Colorado State University veterinary hospital.

C. 1968 through 1969-Veterinarian at Moffat-Minnick Veterinary Hospital in Kent, Washington. It was a mixed practice.
D. 1970 Started own small animal practice as Allard Animal Hospital, Loveland, Colorado until March of 1991.
E. 1970-1978 Part time health officer for the City of Loveland.
F. 1983-1991 Member of the Colorado State Senate
G. 1991-1997 Member of the United States House of Representatives
H. 1997-2009 Member of the United States Senate
I. 2009-Current: Founder and managing partner in Wayne Allard Associates, LLC
J. 2009-2012: Founder and CEO of the Prion Research Institute
K. 2012-Current: American Motorcyclist Association, Vice President of Government Relations.

VII. Political Activities

A. 1974 Republican precinct committeeman
B. 1978 Larimer County Republican executive committee, Republican Central Committee of the Fourth Congressional District, Central Committee of the Colorado Republican Party, Precinct Chairman for "Bill Armstrong for U.S. Senate."
C. 1980 Organized the Larimer County Republican Club and chaired it for 2 years.
D. 1984-1986 Campaign chairman for U.S. Congressman Hank Brown in the 4th Congressional District of Colorado.
E. 1988 4th Congressional District coordinator for the "Bush for President" campaign and on the Western United States Advisory Committee chairing the Agriculture section for the Bush for President campaign.
F. 1992 Colorado Honorary Co-Chair for "Bush for President"
G. 1999-2000 Chairman of the Inner Circle for the National Republican Senatorial Committee. Met an historic high when raised more money than outlined in the budget.
H. 2004 Co-chair with Governor Owens for the Colorado "George W Bush for President" campaign.

VIII. Positions held in elected office:

A. 1978 The first elected position was as a Republican Committeeman when this position was put on the primary ballot
B. 1983 Sworn into the Colorado State Senate
   a. Elected Caucus Chair for 6 years
C. 1991 Sworn into the U.S. House of Representatives
   a. Elected as Freshman Class to House Committee on Committees
   b. Elected as Sophomore Class to House Committee on Committees
D. 1997 Sworn into the U.S. Senate
   a. Assistant Majority whip
   b. Assistant Minority whip
E. Took voluntary term limit growth and served 8 years in Colorado Senate, 6 years in the U.S. House of Representatives, and 12 years in the U.S. Senate.

X Civic Activities and Honors

A. Attended CSU on Fort Collins Lions Club Future Citizen of Tomorrow Award and Scholarship (1962).
B. Honored as one of top 4 Colorado 4-Her's in leadership in 1963.
C. Professional Chairman of Loveland United Way-1972
D. 4-H leader-1970 thru 1976.
E. Scout advisor on dog care
F. CSU Young Alumni Committee
G. Chairman of Loveland Capital Improvement Citizen Committee-1980
H. Vice Chair of Larimer County Government Study Committee-1981
I. Volunteer veterinarian at Annual Cosmopolitan Mutt Derby 1970-1980
J. Volunteer Loveland Corn Festival 1984, 1985.
K. Volunteer Veterinarian at Estes Park Scottish Highland Festival-1986
L. Member Larimer County Farm Bureau

M. Board of Director of Colorado Agriculture Leadership Council-September-1985
N. Board of Director of Larimer County Mutual Affordable Housing Association-1986.
O. Listed in Marquis Who's Who in the West.
P. Guardian Advisory Committee for National Federation of Independent Business (NFIB)-1987.
Q. Member of Honorary Committee supporting "Scouting for Food"-1988
R. The Friendship Force of Northern Colorado program participant to foster better international relations and presented Colorado flag in 1986, 1988, 1989.
S. 1990 Honor Alumnus of C.S.U. from the Department of Veterinary Medicine and Biomedical Science.
T. 1992 Honoree George H. Glover Gallery of Distinguished Faculty and Alumni at Colorado State University.
U. 1991-2000 Presidential appointment to the James Madison Foundation Board of Directors.
V. 1999 CSU Alumni Charles A Lory Public Service Award.
W. American Veterinary Medical Association President's Award.
X. Habitat for Humanity (Philadelphia House, House the Senate Built and Loveland Senate House sponsored. Loveland House was first in Colorado sponsored)
Y. Honorary Member Award of the American Board of Veterinary Practitioners granted on May 3, 2003.
Z. 2005 Recipient of the George E Brown Jr. Congressional Honor Award for leadership in imaging and geospatial information.
AA. University of Colorado Alumni Association 2005 Congressional Legislator of the Year.
BB. 20006 recipient of the AVMA Meritorious Service Award

Chairman STEWART. Thank you, Senator. On a personal note, I will note that your home State of Colorado is almost as beautiful as my home State of Utah, and I look forward to joining you on your next motorcycle ride through the land.

I now recognize Mr. Leister for his testimony.

STATEMENT OF MR. MIKE LEISTER,
MEMBER, BOARD OF DIRECTORS,
COORDINATING RESEARCH COUNCIL

Mr. LEISTER. Good afternoon. Thank you for inviting me here today to testify on mid-level ethanol research programs conducted by the Coordination Research Council, CRC. I am a Senior Fuels Policy Advisor for Marathon Petroleum Corporation, but today I am here to represent CRC. I am currently a member of the CRC Board of Directors, and I am a past President of the Board.

CRC is a research organization that has been around for more than 70 years. You may not have heard of it much before, but it has done significant research throughout the two World Wars and since then. About two-thirds of the CRC budget is paid for by automobile manufacturers and the American Petroleum Institute. The remaining funding is paid for on a project-by-project basis by outside organizations. CRC is the gold standard of vehicle and fuels research.

In recent years, the U.S. Environmental Protection Agency, the U.S. Department of Energy, the California Air Board, the National Renewable Energy Lab, and even the Renewable Fuels Association and Growth Energy have contributed significant funds to CRC research projects.

I would like to stress at the outset that my testimony for CRC does not engage in any advocacy. CRC stays out of advocacy. We try to conduct straightforward research and report the facts that have been learned. CRC leaves it to other parties to apply political interpretation to these results. My written testimony has some additional background on CRC.

Shortly after the enactment of the *Energy Independence and Security Act* of 2007, the auto, oil industries, and even DOE and EPA recognized that substantial research was needed to assess the compatibility of higher-level ethanol blends with existing vehicles and small engines. The Coordinating Research Council developed and funded a comprehensive, multi-year testing program. In the early stages of this program, DOE and NREL participated in the design of various projects and even helped write some of the preliminary reports. The CRC has spent close to $14 million looking at mid-level ethanol blends research over the past years, and we are committed to finishing the projects that we have underway.

Attachment One of my testimony lists the CRC programs and their schedules. The chief programs in this area are, first of all, the durability of the engine itself, particularly engine valves and valve seats. That program has been completed. The durability of the vehicle onboard fuel storage and handling equipment. That project has also been completed. The computerized onboard diagnostic system, or OBD, which the driver often sees as the check engine light coming on and off, that project is still ongoing, and finally, the last

major part of our research has been the vehicle evaporative emissions control system, which minimizes the release of fuel vapors to the atmosphere, and that project has been completed.

This comprehensive set of test programs will be completed this spring with the OBD Program being completed. However, the test results on at least two of the programs, the engine durability and the fuel system durability, suggest that E15 has the potential to damage millions of vehicles in the current U.S. fleet.

CRC, along with EPA and DOE, participated in all eight of the mid-level ethanol stakeholder meetings that have been held since May of 2008. On each occasion, we shared our research schedule and preliminary test results. However, EPA chose to ignore this research. Instead of waiting for CRC studies to be completed and thoroughly evaluated, EPA improperly used data from a DOE catalyst durability program and drew conclusions about E15 effects that the DOE Program was simply not designed to evaluate.

My testimony today will highlight the results of the CRC E15 research on engine durability and fuel system durability.

On engine durability, that research demonstrated that E15 and E20 could cause engine damage, specifically excess valve and seat wear under certain driving conditions in some of the existing vehicles that were expected to be sensitive to ethanol concentrations. Two out of eight models tested in the program failed on E15 and E20 but not on E0. The failures that occurred were compression failures, and they can result in the loss of power, increased emissions, and high repair costs for the consumer.

On fuel system durability, the research identified an elevated incidence of fuel pump failures, fuel system component swelling, impairment of the fuel level measurements in some of the vehicles tested. E15 can cause erratic and misleading fuel gauge readings and cause improper check engine light illuminations. Fuel pump failures will stop the flow of fuel to the engine, which can result in breakdowns on the highway or busy streets. A fuel system components problems did not develop when CRC tested E10 or E0 on these components.

Discovering these problems was not really very surprising, because valve and valve seat upgrades are typically what an auto manufacturer does to make a vehicle E85 compatible. Fuel pumps and level sender problems are also not surprising, because these components also are typically upgraded to make flex fuel vehicles for E85.

I would like to point out that CRC only tested a small sample of vehicles, engines, and components in the current U.S. vehicle fleet, and that most of the sampled vehicles, engines, and components demonstrated no problem with E15; however, the problems uncovered represent serious concerns over the useful life of millions of the vehicles in the current fleet. Until 2012, no vehicles in the U.S. fleet, except for flex fuel vehicles, were really designed to handle E15, so it was not surprising these problems were found.

CRC simply believes that the research demonstrates that millions of the vehicles, engines, or components in the U.S. fleet could be damaged by E15.

Thank you.

[The prepared statement of Mr. Leister follows:]

Testimony for Mid-Level Ethanol Blends: Technical and Consumer Research Needs
Date: February 26, 2013

Representative Andy Harris, Chairman
Representative Suzanne Bonamici, Ranking Member
House Science, Space and Technology Subcommittee on Environment

Mike Leister, Board Member
Coordinating Research Council
3650 Mansell Road
Suite 140
Alpharetta, Georgia 30022

Chairman Harris, Ranking Member Bonamici, and members of the Subcommittee:

Good Afternoon. My name is Mike Leister. I would like to thank you for inviting me here today to testify on midlevel ethanol research programs conducted by the Coordinating Research Council (CRC). I am a senior fuels policy advisor for Marathon Petroleum Corporation but I am here today to testify for the CRC. I am currently a member of the CRC board and a past president of the board. CRC is a research organization that has been around for more than 70 years conducting research into fuels, engines and vehicles. About two thirds of the CRC budget is paid for by automobile manufacturers and the American Petroleum Institute. The remaining funding comes from outside organizations on a project by project basis. CRC is the gold standard of vehicle/fuels research organizations. In recent years, the US Environmental Protection Agency (EPA), the US Department of Energy (DOE), the California Air Board, the National Renewable Energy Laboratory (NREL), the Renewable Fuels Association and Growth Energy have contributed significant funds to CRC research projects. I would like to stress at the outset of my testimony that CRC does not engage in advocacy. It conducts straight forward research and reports the facts that have been learned. CRC leaves it to other parties to apply political interpretations to these results. My written testimony includes additional background on the CRC.

Shortly after enactment of the Energy Independence and Security Act in 2007, the oil and auto industries and other stakeholders, including EPA and DOE, recognized that substantial research was needed to assess the compatibility of higher ethanol blends with existing vehicles and small engines. The Coordinating Research Council developed and funded a comprehensive multi-year testing program. In the early stages of this program, DOE and NREL participated in the design of various projects and even helped write one of the preliminary reports. The CRC has spent close to $14 million towards mid-level ethanol blends research over the

past several years. We are committed to completing the current set of research projects.

Attachment 1 to my testimony lists the CRC research programs and our schedule for completion. This research examines the following areas:

- The durability of the engine itself, particularly the engine valves and valve seats (completed);
- The durability of the vehicle onboard fuel storage and handling equipment (completed);
- The computerized On-Board Diagnostic system, or OBD, which the driver often sees as the "check engine" light (on-going); and
- The vehicle evaporative emissions control system, which minimizes the release of fuel vapors to the atmosphere (completed).

This comprehensive set of test programs will be completed by this spring. However, the test results in at least two programs – engine durability and fuel system durability – suggest that E15 has the potential to damage millions of vehicles in the current US fleet.

CRC, along with EPA and DOE, participated in all eight of the Midlevel Ethanol Stakeholder meetings held since May of 2008. On each occasion we shared the CRC research schedule and preliminary test results. However, EPA chose to ignore this research. Instead of waiting for the CRC studies to be completed and thoroughly evaluated, EPA improperly used the data from a DOE Catalyst Durability program and drew conclusions about E15 effects which this DOE program was not designed to evaluate.

My testimony today will highlight the results of the CRC E15 research on engine durability and fuel system durability.

- Engine Durability- This research demonstrated that E15 and E20 could cause engine damage, specifically excessive valve and seat wear, under certain driving conditions in some existing vehicles that are expected to be sensitive to ethanol concentration. Two of eight models tested in the program failed on E15 and E20 but not on E0. Failures could result in loss of power, increased emissions, and high repair costs.

- Fuel System Durability- This research identified an elevated incidence of fuel pump failures, fuel system component swelling, and impairment of fuel level measurement systems in some of the vehicles tested. E15 can cause erratic and misleading fuel gauge readings or cause check engine light illuminations. Fuel pump failures will stop fuel flow to the engine. This could result in breakdowns that leave consumers stranded on busy roads and highways.Fuel system component problems did not develop in the CRC tests when either E10 or E0 was used.

- Discovering these problems was not surprising because valve and valve seat upgrades are typically required to make an engine E85 capable. Fuel pumps and levels sender problems are also not surprising because these components are also typically upgraded to tolerate higher ethanol levels in E85 flexible fuel vehicles.

Impacts

I would like to point out that CRC only tested a small sample of the vehicles, engines and components in the current US vehicle fleet and most of the sampled vehicles, engines and components demonstrated no problems with E15. However, the problems uncovered by the CRC research represent serious concerns over the useful life of millions of the vehicles in the current US vehicle fleet. Until 2012, no vehicles in the US fleet, except for Flexible Fuel Vehicles, were designed to handle E15, so it is not surprising that these problems were found.

Conclusion

CRC believes that the research demonstrates that millions of the vehicles, engines and components in the current US vehicle fleet could be damaged by E15.

Written Testimony for Mid-Level Ethanol Blends: Technical and Consumer Research Needs
Date: February 26, 2013

Representative Andy Harris, Chairman
Representative Suzanne Bonamici, Ranking Member
House Science, Space and Technology Subcommittee on Environment

Mike Leister, Board Member
Coordinating Research Council
3650 Mansell Road
Suite 140
Alpharetta, Georgia 30022

Chairman Harris, Ranking Member Bonamici, and members of the Subcommittee:

Thank you for inviting me to testify on mid-level ethanol research programs conducted by the Coordinating Research Council (CRC). I am a senior fuels policy advisor for Marathon Petroleum Corporation, but I am here today to testify for the CRC. I am currently a member of the CRC board and a past president of the board.

The Coordinating Research Council (CRC) is a non-profit organization that directs, through committee action, engineering and environmental studies on the interaction between automotive/other mobility equipment and petroleum products. The Sustaining Members of CRC are the American Petroleum Institute (API) and a group of automobile manufacturer members (Chrysler, Ford, General Motors, Honda, Mitsubishi, Nissan, Toyota, and Volkswagen). CRC research programs are managed by five technical committees: Advanced/Vehicle/Fuel/Lubricants; Atmospheric Impacts; Emissions; Performance; and Aviation.

Through CRC, personnel in the automotive equipment and other related mobility industries and in the energy industries can join together, and can join with government, to work on mutual problems. CRC has no facilities for conducting direct research. There are two basic approaches to accomplishing the research objectives. One approach involves a pooling of efforts carried out in the laboratories of cooperating companies. The result is a large-scale research program that no one company would be willing to undertake.

The second approach involves supporting research under contract to universities, industrial laboratories, and private research organizations. In this case, a small committee of technical experts develops the program, selects the research organization, and monitors the research to its conclusion. Funding for the contract research is largely provided by the American Petroleum Institute, the automobile manufacturers, the Government, and others.

CRC is not involved in any way in regulation, which remains a governmental responsibility; nor is CRC involved in the development of hardware or petroleum products, which remains the responsibility of private industry. The formal objective of CRC is to encourage and promote the arts and sciences by directing scientific cooperative research to develop the best possible

combinations of fuels, lubricants, and the equipment in which they are used, and to afford a means of cooperation with the Government on matters of national or international interest within this field.

CRC has submitted the following documents as additional written testimony:

Intermediate-Level Ethanol Blends Engine Durability Study
Durability of Fuel Pumps and Fuel Level Senders in Neat and Aggressive E15 Study
CRC Research on Mid-Level Ethanol Blends (summary of the aforementioned studies)

Thank you for the opportunity to speak with the subcommittee about this important topic.

Michael E. Leister

Bio

Mike Leister has a MS in Chemical Engineering and an MBA from Virginia Tech. He has worked for Marathon Oil, Marathon Ashland Petroleum, and now Marathon Petroleum Company for 33 years. Mike has been involved in Refinery modeling, computer automation and process control and supply and maintenance systems. Mike is currently MPC's Senior Fuels Policy Advisor. He has been an IT manager, an Operations Planning Manager, and most recently was the Manager of Fuels Technology for MPC. Mike just completed working on the latest National Petroleum Council study of Future Transportation Fuels. Mike is currently a member of the board of the Coordinating Research Council. He chairs the American Petroleum Institute Fuels Subcommittee, is a member of the API Economics work group, and belongs to the American Fuels & Petrochemical Manufacturers Fuels Advisory Subcommittee.

Chairman STEWART. I would like to thank the three of you for your sacrificing your service and making yourselves available to us today for your questions and your expertise.

Reminding the Members that Committee rules limit questioning to five minutes.

The Chair at this point would open the round of questioning, and the Chair recognizes himself for five minutes.

A concern that I think many of us have, and this is bipartisan, it is something that I think is unanimous throughout, you know, leadership in government and that is the risk of unfunded mandates from the Federal Government, where rules and regulations may be imposed without authorizing any funds to offset the actual cost of those rules or regulations.

And I think this may be a potentially good example of that, and, again, it would be bipartisan if that were the case. If we were to start receiving calls from our constituents who had significant damage to what would for many of them be one of the largest investments they are making short of a home or some others, the automobile that they drive, and if they did receive damage from that because of these rules, my question to you is, who is liable if the consumer were to experience engine damage because of the use of E15 in engines?

And I think you have answered the question, but if you feel like you would elaborate, what is the likelihood of that happening, and you know, what would you do to recommend that we avoid that situation?

Maybe, Mr. Darbelnet, we could begin with you.

Mr. DARBELNET. Certainly. Thank you for that question.

Clearly, the liability that would result from that occurring should not rest with the consumer. At the same time, none of the other parties that seem to have an interest in making E15 available are willing to step forward and assume liability. In fact, there have been efforts on their part to avoid liability, which I think is an indication of their recognition that there is an issue here that needs to be dealt with.

I think we should also observe that the damage that we are concerned about is probably going to occur over a period of time, and so we will not immediately discover the full magnitude of the problem, and by the time it is apparent, I suspect it is going to be difficult to trace back the problems of the fuel that may have led to the damage, because if you have been driving for a year or two and using this fuel and you have damage, was it when you bought it at service station A or when you bought it at service station B or service station C? So really what we need to do is to adequately test it before we make it available for sale. That is the solution.

Chairman STEWART. Well, I just have to interject. I am just shocked that no one is stepping forward to claim responsibility for this potential liability, but of course, they wouldn't, and like you said, it is ambiguous and difficult to determine in some cases.

Would either of the two of you like to address the same question?

Mr. ALLARD. Mr. Chairman, I would just comment that we don't recommend to our members that they purchase a motorcycle that is not covered by a manufacturer's warranty, and when these are

covered by warranty, in all clear conscience we can recommend that they buy that fuel or buy that engine or whatever.

So those warranties are put out there to protect the consumer any liability that they may assume.

Chairman STEWART. And I would just hope that the legislation considers the impacts of that and that we don't leave our constituents with a significant liability that they have no means of controlling.

Mr. Leister, would you like to address that question as well?

Mr. LEISTER. I think Mr. Darbelnet——

Chairman STEWART. Let me ask just very quickly if we have time for this. Why is the testing of the Coordinated Research Council conducted better or more appropriate than the EPA relied on? Are there differences in the underlying studies.

Yes.

Mr. DARBELNET. You appear to be looking at me, but I might want to defer the question to someone else. However, I would offer that we haven't really challenged the EPA research on the basis of did they spend enough time looking at the effect of the fuel. Our concern with their research is the scope. It is my understanding that what they were looking at was the effect of E15 on emission control systems. They did not address the effect of E15 on the other components of the engine that were discussed by one of the previous testimonies.

Mr. LEISTER. Basically, the EPA testing was an attempt to try to figure out whether E15 was a problem in vehicles. There was a vast lack of knowledge in this area. The fact that they chose to maybe not run as strenuous a test as necessary doesn't degrade from the fact that they did a test, but it really wasn't designed to test the whole vehicle, as Mr. Darbelnet just discussed.

The CRC Program was actually designed by auto manufacturers, and the tests were what auto manufacturers would use to test their own equipment before they would sell it to the public, and as that, it had a higher standard than EPA developed for their tests.

Chairman STEWART. All right. Thank you.

I now recognize Ms. Bonamici for five minutes for her questioning.

Ms. BONAMICI. Thank you very much, Mr. Chairman, and thank you to the witnesses. Before I begin my questioning I just wanted to say a word about the witnesses and the hearing record. Because the Department of Energy conducted the research on which the EPA based its decision to grant the E15 waivers, it is important to note for the record that the majority invited neither the Department of Energy nor the EPA to discuss the science and extensive testing on which the EPA based its decision.

In addition, since the Department of Energy released a critique of the study performed by the Coordinating Research Council, the group that Mr. Leister is here representing, this conversation would have benefited from a Department of Energy presence on the panel.

Unfortunately, the Democratic Subcommittee staff got word of Mr. Leister's appearance at this hearing at such a late hour that inviting the Department wasn't an option for us.

So, accordingly, I am planning to submit various materials for the record that help to represent an alternative viewpoint in this debate. Although they don't necessarily represent the views of all of the Democrats on this Committee, it should help bring some balance to the record.

I wanted to ask, just to establish for the record, and I think Mr. Darbelnet, perhaps you would have the answer to this, do you know how many gas stations there are in the United States?

Mr. DARBELNET. I don't know the exact number, but there are——

Ms. BONAMICI. Approximately.

Mr. DARBELNET [continuing]. Thousands and thousands and thousands. Probably, let us say, 100,000 or more.

Ms. BONAMICI. About 100,000.

Mr. LEISTER. One hundred and sixty-nine thousand.

Ms. BONAMICI. Thank you, Mr. Leister. Do you know how many of them are selling E15?

Mr. DARBELNET. My understanding is that there might be somewhere between 10 and 20, the number I heard most recently was 18, that are currently selling it, which is precisely why we think this ought to be addressed now. It is going to be easy to stop when it is only 18. It will be difficult to stop when it is 100,000.

Ms. BONAMICI. Thank you. I just think it is important to establish for the record that we are talking about somewhere around a dozen and a half out of hundreds of thousands. So just for the record.

And, Mr. Darbelnet, I know the AAA, of which I am a proud member, is an organization focused on benefits of membership, peace of mind on the road, money saver, and that is, I think, something that we all appreciate. I am sure that you hear frequently from your members, as I do from my constituents, about the high price of gasoline, and I know that studies have shown that drivers can save up to 83 cents per gallon because of increased ethanol production.

So I just wonder about motorists who drive cars that even manufacturers say can use E15. Should they be allowed the option of buying E15 and setting aside the uniqueness of places like Oregon and New Jersey where we are not allowed to pump our own gas? It is very quaint, but that puts it in a different——

Mr. DARBELNET. Well, thank you for that question and for your support of AAA as a member. With regard to the potential savings per gallon, the numbers that I have seen are far less than 83 cents per gallon. There may be some unique circumstances that you are aware of that would cause the differential to be of that magnitude, but the indications we have are that if it is not price parity, the savings is quite modest, and if one factors in the lesser miles per gallon traveled with E15 than with E10 or pure gasoline, the savings is then reduced because you are not getting as many miles per gallon for the gallon that you bought.

However, clearly we are in favor of options for consumers. Our concern currently is not that E15 should never be brought to market. Our concern is that the consumers do not know whether they should put E15 in their vehicle or not, and there is a huge difference of opinion between the EPA that says you can use it in any

vehicle manufactured after 2001, and the people who actually make the cars who say that it shouldn't be used in virtually 95 percent of the vehicles that are on the roads today.

And it seems to me that with your assistance, we owe it to the traveling public to reconcile viewpoints from the auto manufacturers and the EPA so the consumer is not caught in the middle not knowing who to believe.

Ms. BONAMICI. Thank you, and I truly believe also in consumer education.

I want to ask Mr. Leister, while we have time, when the Coordinating Research Council put out the study on the automobile impact of E15, the Department of Energy did point out some problems that they found with the research. I know that Department of Energy's Vehicle Technology's Program presented an analysis that concluded that the methodologies were significantly flawed in their words.

It is my understanding, for example, that no engines were tested with E10, which represents more than 90 percent of the gas in the United States, and at least one of the tested automobiles is already the subject of a recall involving valve problems.

So can you describe to us how this CRC study compared in terms of scope with the Department of Energy testing? For example, the number of vehicles, the number of miles driven, and did the Energy Department's critique cause you to revisit your methodology?

Mr. LEISTER. Certainly the Energy Department's critique caused us to relook at our program, and API has issued a letter that you can reference. I believe it was sent to the Committee here, outlining various rebuttals there. CRC will just stick to the facts here. DOE decided to do basically a catalyst emissions test. They ran the vehicles to get the catalyst hot enough to get an equivalent life over the life of the vehicle. That is not a very strenuous test, and it is not even the way the average public drives their cars.

CRC, because there is no standard test for engine durability, took the advice of the various auto manufacturers that are members of CRC and developed a composite test based on their experience, and those tests did show some compression leakage, but more important than that, the compression leakage that we determined wasn't the final result. The compression leakage was a signal for us to send the vehicles back to the manufacturers. So each manufacturer got their own vehicle back, tore it apart, and looked at it, and it was only two out of the eight that actually had a problem with the valve seats.

As far as the vehicles being under a recall, I am not aware that any of the vehicles we tested were under a recall for a valve problem.

Ms. BONAMICI. Thank you, and my time has expired.

Thank you, Mr. Chairman.

Chairman STEWART. I thank the Ranking Minority Member, Ms. Bonamici.

The Chair would like to note for the record that the minority had the opportunity to invite any witnesses of their choosing but chose not to at this time, and that I think would help explain some of the choices or the appearances of the witnesses with us today.

The Chair now recognizes Mr. Sensenbrenner for his questions.

Mr. SENSENBRENNER. Yes. Thank you very much, and Mr. Chairman, I am glad that you pointed out that the Democrats did have a chance to invite a witness, and they failed to do so. So the complaint that we heard from the Ranking Member, I think, rings very hollow.

The other thing that really irritates me is casting aspersions on research that is done because it is financed by somebody who may have a party, an interest. The thing is, is that I think that anybody who sells a product wants to make sure that their product is the absolute best that it can be, and maybe part of the motivation of that is to avoid liability problems, but I think part of the motivation is to keep America's edge in terms of developing new products, whether it happens to be fuel, whether it happens to be motor vehicle. And who is supposed to do that if those that manufacture or sell the products don't do it? I don't think the government can come up with something that is objective, and here what we have heard from all three of these witnesses is that the only thing the EPA test did was the impact of E15 on emission systems, not on the engine itself, not on the components parts of the engine.

As a result, the thing that the opponents of this waiver have been harping on is that the study was really not complete. You know, it was kind of, you know, trying to diagnose a skin cancer by doing a CAT scan or an MRI.

Now, you know, having said that, the draft bill that I have, which I hope my minority party colleagues will cosponsor, will have a truly objective analysis being done by the National Association of Sciences, so that nobody can say that the study was done by somebody with a financial interest or was biased because they wanted to advance a regulatory agenda.

Now, I have a couple of questions of Mr. Leister.

Why did the CRC move forward with its studies if E15 was already approved for use?

Mr. LEISTER. Well, actually, we started our studies long before the waiver request was even made. We started our studies in 2008. That is why we actually tested E20 and E15. At the time we started, we were not aware that E15 was going to be the fuel of choice of EPA.

Mr. SENSENBRENNER. Was the EPA's response to your studies objective, and were their results fairly analyzed from an unbiased, scientific viewpoint, or was basically the EPA saying that everybody should ignore what you have done?

Mr. LEISTER. You make it difficult because EPA actually pays for some of our projects, and we would hate to lose their funding.

Mr. SENSENBRENNER. Well, we won't talk about conflicts of interest here.

Mr. LEISTER. You know, EPA did their analysis, and it appeared that they were under a tremendous amount of pressure to come up with some answers, and as a result, the more we informed them that there was more research to be done and more timely, the less interested they were in hearing about that. I might point out that the research that was done, you correctly pointed out that our members do this to find out what is happening, you know, what our problems are. Two of the members of CRC, the auto members, have used that research to actually now make E15-compatible vehi-

cles. One makes—has made vehicles in 2012 and 2013 that are E15 compatible, and one has started in 2013 to make vehicles that are E15 compatible.

I think that one says volumes for the fact they say the one is—any other vehicles they made prior to that they won't warranty with E15, and yet they are making ones that will, and secondly, that they have seen what the problems were based on the research, and they have fixed those problems.

Mr. SENSENBRENNER. I would like to squeeze in one more question of Senator Allard. There are safety concerns, as well as the other concerns, that have been expressed by the witnesses at the hearing. For example, the Coast Guard told the EPA that a waiver raised concerns relating to possible reduction in level of safety for recreational boaters. So we have got the recreational boaters.

And at least in my part of the country and maybe yours, too, Senator Allard, we got snow blowers because everybody would be marooned if the snow blowers didn't work, and then during the summer we have lawnmowers. All of these small engines have the same problems with E15, and many of them are two-cycle engines where the increased ethanol would end up reducing the lubricating capacity of the oil that has to be mixed in with the engines.

What do you have to say about that, and you know, can you broaden the complaint with the other small engines that I have mentioned?

Mr. ALLARD. Well, I am not an engineer and probably can't answer that very directly, but I can say that there is concern among motorcyclists about the heat that is generated and the safety of the engine when they are riding their motorcycle.

Mr. SENSENBRENNER. Okay. I will rest my case on the Coast Guard then. Thank you.

Chairman STEWART. Thank you, Mr. Sensenbrenner.

Seeing not another individual to my right, we will now yield down to Mr. Weber.

Mr. WEBER. I really don't have a lot of questions, Chris. I appreciate that. I will note for the record that, unlike New Jersey, in Texas we can pump our own gas. I figured that in Texas we understand that consumers and businesses get it right a lot more often than the Congress. I applaud you all for testifying.

Thank you.

Chairman STEWART. All right. Well, thank you then.

And Mr. Rohrabacher.

Mr. ROHRABACHER. Thank you very much, and I appreciate your leadership and coming right out of the gate this way.

Chairman STEWART. Thank you, sir.

Mr. ROHRABACHER. Straight at an important issue. This is an important issue, and I will tell you something. Out in California, nobody can tell me that I am getting, that I not getting less gas mileage because of that ethanol, and quite frankly, people think we Congressmen are rich. Well, I am not rich, and it affects me, and what about those people who don't make as much as those of us in Congress? Increase the cost of filling up your tank, that just means you don't have as much money to pay rent or feed your kids or take your family out for a dinner.

So ethanol was first in place, and you are the experts here, wasn't it first put in place, this mandate for ethanol, to get rid of the lead in gasoline? Is that right? No. Why did we have the mandate to begin with?

Mr. LEISTER. The original ethanol mandate, I believe, started from a program EPA had to reduce carbon monoxide in certain cities that were in non-attainment of the carbon monoxide standard. I believe it was back in '91, '92, timeframe. There were a handful of cities that had carbon monoxide problems. There had been some splash blending of ethanol for economic purposes prior to that, but the actual regulation of ethanol was first put into place——

Mr. ROHRABACHER. For carbon monoxide gas, and did that lower the level of carbon monoxide?

Mr. LEISTER. Yes. At the time, the engine technology at the time with carburated vehicles and that getting extra oxygen from the ethanol actually did help reduce carbon monoxide. Since that time, the new engines now automatically adjust. They sense the oxygen coming out of the exhaust and adjust the intake air, so you would no longer get that benefit from vehicles today, but it was a benefit back in the early——

Mr. ROHRABACHER. So in other words, we put this requirement in to lower the carbon monoxide, but because technology, engine technology has advanced, that that would be no longer necessary today? Is that what you are saying?

Mr. LEISTER. That is true, but even more important than that, I guess, is that all the areas that were in carbon monoxide non-attainment, except for maybe one, I believe, have all come into attainment. They all came into attainment real fast, even as engine technology was——

Mr. ROHRABACHER. Is that true with motorcycles, too, Senator?

Mr. ALLARD. Well, if you will recall, about the time I was in the House serving with you, the issue was oxygenated fuels.

Mr. ROHRABACHER. That is right.

Mr. ALLARD. And we had the MTBE versus ethanol, and that was a big debate, and it was to reduce the air pollution.

Mr. ROHRABACHER. And was the air pollution level and would it be better today or worse today if we didn't have ethanol in the gas? From what I just heard, there it sounded like you were saying even without ethanol the gas, the air pollution level would not be any worse today.

Mr. LEISTER. Well, you got to understand there are a lot of things we try to control in the air, not just carbon monoxide. The other major one is ozone. Okay?

Mr. ROHRABACHER. Right.

Mr. LEISTER. And ozone comes about because of knocks NO_2 emissions and volatile organic compounds or VOC emissions. In 1995, reformulated gasoline was legislated and regulated by EPA. That fuel is both lower in VOCs and lower in NO_2, and so it is used in areas that have a problem with attaining the ozone standard, and it has helped, but in the interim all the other gasoline in the country because of various other EPA regulations has become a lot more, a lot cleaner.

Mr. ROHRABACHER. Is there anything else, is there another impact, for example, particulates?

Mr. LEISTER. There is a particulate problem also.

Mr. ROHRABACHER. Doesn't the ethanol contribute to that rather than helping bring that down?

Mr. LEISTER. It is difficult to say. I say there are some studies that show that particulates are reduced with oxygen, the extra oxygen that is present. Under newer vehicles, that effect isn't quite as large, and so there are some studies that show that particulates have actually gone up as a result of that, I believe.

Mr. ROHRABACHER. Right. Okay. Well, I think——

Mr. LEISTER. But——

Mr. ROHRABACHER [continuing]. There are some studies like——

Mr. LEISTER [continuing]. It is really slight. Okay.

Mr. ROHRABACHER. But let me just note this, that if you are bringing down the miles per gallon that you are getting in your car, which ethanol does, I mean, I will testify to that, so that means you have to use more gas. You have to use more gas, that means to get to the same place, that means you have to have more, you are putting more stuff into the air.

Mr. LEISTER. You are, but——

Mr. ROHRABACHER. But if you have to use more of it, that means you got the same amount of stuff going up.

Mr. LEISTER. But the tier two standards that EPA put in place in 2007 basically required engines and fuels to be 90 percent—have 90 percent less emissions than they had before. That overwhelms most of these other effects that you are talking about.

Mr. ROHRABACHER. Ninety percent based on miles per gallon, perhaps.

Mr. LEISTER. No. It is actually——

Mr. ROHRABACHER. No?

Mr. LEISTER. It is on a per-mile basis. So it builds in the miles per gallon factor.

Mr. ROHRABACHER. All right. Well, thank you very much. Just let me note that in California, we—at least those of us who are filling up our tanks with gas, and we drive a lot out there—we definitely believe that ethanol is costing us and costing American families a lot of money, and I am not so sure that it is worth exactly what we are paying for. Senator Allard, one last thing. Did you say this is going to hurt the engines for motorcycles?

Mr. ALLARD. Congressman, that is a concern that we have because the manufacturer won't issue a warranty when you use E15 in the engine, so we think there is a reason for that, and we wouldn't recommend it to our consumers.

Mr. ROHRABACHER. Yes. We are afraid of that, too, and that also is a factor in determining what the pollution level is. If you are going to destroy an engine, that means, in the end, there is a lot more stuff going into the air when you add in all of that.

Thank you very much, Mr. Chairman.

Chairman STEWART. Yes, sir. Thank you, Mr. Rohrabacher. We now recognize the full Committee Chairman, Mr. Smith.

Chairman SMITH. Thank you, Mr. Chairman, and Mr. Chairman, let me say I regret missing the witnesses' testimony today but appreciate all of them being here, and Senator Allard, nice to see you again, and welcome back.

What I am trying to do is, in my own mind, and I think this will be helpful to all of us and helpful to others as well, is sort of compiling a list of advantages and disadvantages of E15. And what I would like to do is give you my list on both sides and ask you all to comment to see if you agree or disagree or if you can add anything to either side of the ledger.

On the disadvantages, we have unknown impact of E15 on various types of engines. We have had a study about emissions. We haven't had any real study on the impact of the engines themselves. Second, you get about 30 percent less gas mileage if you use E15. That might be a disadvantage. Environment, you can probably argue that either way, but the amount of energy, probably fossil fuel energy that goes into growing the corn necessary for ethanol is obviously not a positive impact on the environment. And then fourth, I would put, well, maybe those are my three. I was going to say, talk about more of the harm to engines, but I think my first point covers them.

On the other side, as far as advantages go, price of gasoline is going to be less costly. I would put that as a positive, and then, again, on the environment you can probably argue either way. There is less CO_2 going into the environment, but I have already mentioned the other side of that.

What do you all think of that list of advantages and disadvantages and Mr. Darbelnet, I guess we will start with you.

Mr. DARBELNET. Thank you. Well, with regard to impact on the engine, clearly that is one of our concerns, and I think you are correct to have that on your list of negatives.

With regard to getting less miles per gallon, I would agree. It will yield less miles per gallon, but I think the differential is much smaller than 30 percent. Pure gas would be the benchmark. E10 would probably get you slightly less than four percent worse gas mileage.

Chairman SMITH. The figure I heard was actually 33 percent less. You think that is too much? Okay.

Mr. DARBELNET. From everything I have seen, it is between four and six percent less, depending on whether you are using E10 or E15.

Chairman SMITH. Okay.

Mr. DARBELNET. And as to the impact on corn, I am well over the tip of my skis on that topic, but with regard to the positives, less costly, yes, slightly, but one has to bear in mind that you are getting less miles per gallon, and with regard to the environmental impact, from our conversations with our engineers, they think that overall it is pretty close to being a wash.

So really, the only outstanding issue for us at this point is the matter of impact on engines, and I think we should note in the pluses the reduced dependency on fossil fuel that results from using ethanol as an additive.

Chairman SMITH. Okay. Environment you would call a wash and less mileage, less cost, and unknown impact on engines on negative impact?

Mr. DARBELNET. Negative impact.

Chairman SMITH. Negative impact. So overall negative, I guess.

Senator Allard, and by the way, I am just curious, if the mileage is down six percent, is the cost going to be down six percent or not?

Mr. DARBELNET. Well, that is part of the conversation. The cost is less. Is it six percent. Sometimes it is six percent, sometimes it is a little more, sometimes a little bit less.

Chairman SMITH. We are coming up with another wash there.

Mr. DARBELNET. We are coming very close to a wash. I think the big issue is the impact on the engine.

Chairman SMITH. Great. Senator Allard.

Mr. ALLARD. Congressman, I think the big concern that we would have is confusion at the gas tank, you know, with the rules and regulations that are at the gas tank that are being imposed upon the retailer. You know, I think that is a concern that we have, and then because of that confusion, you put the wrong kind of fuel in your engine, which the warranty will stand up with.

Also, motorcyclists are concerned about the fact that if E15 is used in a rural gas station, for example, and you are out in a rural area, and you run out of gas, you don't have much choice, and so it takes away consumer choice in some instances.

Chairman SMITH. Okay. Thank you, and Mr. Leister.

Mr. LEISTER. Again, I am talking for CRC, so I am going to just try to stick with scientific facts rather than opinions and political facts. Definitely we are concerned about the impacts on the vehicles, the engines, and the components with E15. We think millions of vehicles will be affected, so it is a bad choice for the public.

As far as fuel economy, ethanol is 30 percent less energy than gasoline. When it is blended at a 10 percent rate, the E10 mixture has a three percent less fuel economy. E15 would have 4 1/2 percent using just straight multiplication there.

And as far as energy and corn, there are a lot of studies. California found that, you know, corn wasn't necessarily so good for the environment, but then they changed their mind. EPA found that corn was. A lot of this has to do with the way you account for the energy that goes into the distiller's dried grain.

However, if you are strictly looking at fossil energy going to something to give you energy to move a transportation vehicle, there is more energy of fossil fuel that goes into making ethanol than you get energy out of the ethanol. But when you add the distiller's dried grain in, the net result overall is positive. So if you have a program where you are trying to produce feed for animals, you might want to think about it.

Chairman SMITH. Okay. Did you comment on engines? Did you say it would be a negative?

Mr. LEISTER. Yes. Yes.

Chairman SMITH. Okay. So there is general agreement among all the witnesses on a negative impact or a potential negative impact on engines then. Okay. Thank you.

Thank you, Mr. Chairman.

Chairman STEWART. Thank you, Chairman Smith.

The Ranking Minority Member has requested a follow-up question. We now recognize Ms. Bonamici.

Ms. BONAMICI. Thank you very much, Mr. Chairman. I am holding up the whole side of the dais today.

I wanted to talk a little bit about the misfueling that I know several of you have mentioned. Misfueling would be a real concern, but it is not an unprecedented issue. Similar problems were anticipated when unleaded fuel was introduced, and more recently there were concerns about the ultralow sulfur diesel that would result in widespread misfueling as well as infrastructure challenges. For a couple of years, there were two types of diesel in in the fuel supply: low sulfur diesel and the ultralow sulfur.

Did the AMA or the AAA notice any significant refueling, misfueling issues, and was the fuel industry generally able to meet the challenge, and maybe you could talk a little bit about some of the consumer information that went into informing gasoline consumers about those issues. Senator Allard and Mr. Darbelnet, perhaps. I don't know if, Mr. Leister, you want to opine on that as well. Thank you.

Mr. ALLARD. Well, those—if I might respond, on the misfueling issues, I guess you would say the four gallon, when they required the four-gallon minimum, that was—that is a problem for us because many times the tanks only hold three to three and a half gallons. So the question came up then, what do you do with the remaining fuels, and are you going to be charged for the four full gallons if you don't use it? So that is where confusion at the pump existed when we had that mandate. Now——

Ms. BONAMICI. But that only for the——

Mr. ALLARD [continuing]. The EPA has tried to correct that, and they have now, as we understand it, you know, you do have a choice on blender pumps as well as you have a dedicated pump just for 10 to 0 on your ethanol levels. And then if you—or you can just have single hoses, and you don't have an issue, and you don't have the minimum.

And so it gets—it is very confusing, you know, by the time you consider all the rules and regulations, and it is confusing to our consumers, and it is hard to make wise choices as a consumer when it gets confusing.

Ms. BONAMICI. Thank you, Senator, and I am interested, too, in hearing about some of the efforts that have been made in the past about different fueling options and informing consumers. How has the industry gone about informing consumers when there were other concerns about misfueling?

Mr. DARBELNET. Well, that is an excellent question, and it reminds me of the transition that we encountered when we went to unleaded fuel, which you referred to. As you may recall, at that time they changed the size of the hole through which the gas is put into the vehicle, and we changed the size of the filler spout on the pumps, such that you could not fit the nozzle from an unleaded pump into the tank of a vehicle that wasn't designed to receive it. So unless you were going to use a funnel to fill your car, there was virtually no risk of putting unleaded fuel in a vehicle that should have leaded fuel.

There is no discussion currently of anything of that nature being done to prevent misfueling as it relates to E15, and frankly, I think there is a limit to how many different sizes we can come up with to address the problem.

So I think the misfueling risk is more significant in this case than it has been in the past, simply because we don't have some of the options available that we did previously.

Ms. BONAMICI. And yet, Mr. Leister, and if you could just clarify, I recall that you testified that there are manufacturers now who are manufacturing cars that are made for E15. Is that correct?

Mr. LEISTER. Yes. I will answer that first, and then I would like to get back to the previous question, but, yes, there are two manufacturers that I am aware of that have announced, one that it is 2012, and 2013, cars are E15 compatible, and I believe their owner's manuals now state that, and one that has done the same thing for their 2013, vehicles.

Ms. BONAMICI. Okay. So there have been adaptations, and then——

Mr. LEISTER. There have been adaptations.

Ms. BONAMICI [continuing]. Your response to the prior——

Mr. LEISTER. I guess I would like to point out that for unleaded gasoline there wasn't—there was a nozzle change, but also from our point of view there was, we believe, significant cheating as people could buy, for five or 10 cents, a little plastic adapter called an emergency fuel system, where you would plug it on the end of the nozzle, and it would make it smaller to fit into the old hole.

So if you give people sufficient incentive, they will try to go for the lower fuel, whether it is good for their car or not.

Ms. BONAMICI. Interesting commentary. Well, thank you very much. I yield back my time. Thank you.

Chairman STEWART. Okay. Thank you, Ms. Bonamici.

Knowing that we are needed on the House Floor for a vote in just a few moments, the Chair would like to recognize Mr. Neugebauer.

Mr. NEUGEBAUER. Yes. Well, thank you, Mr. Chairman, and thank you for holding this hearing. This is a very important issue.

This will be a quick question because we need to go vote, but, you know, some of the proponents of E15 and ethanol bring up the point that in other countries they burn 50, 60 percent, and some vehicles are burning almost complete 100 percent ethanol. So what is the distinction here of the U.S. moving to the ethanol blending versus what people will point to other countries using? What is the difference?

Mr. LEISTER. Most of the time people reference Brazil when they are talking about that, and the fact is, I think, most of my auto manufacturer colleagues would tell you that the vehicles that they sell in Brazil toady are essentially FFEs. So they are designed to take higher levels. They are not U.S. vehicles that shipped down there.

I would like to point out the early days of the program in Brazil, the ethanol ate the cars apart, and so they had to replace them with FFEs.

Mr. NEUGEBAUER. Either one of you want to comment on that?

Mr. DARBELNET. I would simply concur with what was offered in terms of a commentary.

Mr. NEUGEBAUER. So I think the conclusion I am drawing from listening to the testimony today is that there is a movement to provide in the automobile industry an adaptation to that, but what you are saying, it is not mature enough at this particular point in

time, and that if we force that process, then we could be actually damaging the consumers that own vehicles.

Mr. DARBELNET. That is correct, sir. If one thinks about how many new vehicles enter the fleet each year and the average age of the fleet, it is going to take probably a decade to get to a point where a substantial majority of vehicles would be suitable for E15, unless there is some other discovery or retrofit that becomes available or some further ingredient that can negate the effect, but at the present time, there are roughly just five percent of the vehicles on the road that could safely burn E15.

Mr. NEUGEBAUER. So nobody has come up with an additive or something like that that helps.

So, Senator Allard, good to see you again. So what should be the appropriate policy on this issue? You are an old policymaker. What would you recommend to this Committee?

Mr. ALLARD. Well, I would withhold putting E15 on the market until the research has been conducted that would assure that motorcyclists, in this particular instance since I represent the AMA, can use it without damage to the engine. To me, that is the proper policies to have the right research, and it hasn't been done at this point, at least for the type of vehicle that I am representing at this table.

Mr. NEUGEBAUER. And we are really not, I mean, you bring up motorcycles, and we have been talking about automobiles, but really we are actually talking about a lot of other products that——

Mr. ALLARD. Yes.

Mr. NEUGEBAUER [continuing]. Use fuels that we need.

Mr. ALLARD. Well, I think you can generalize and say small engines in general.

Mr. NEUGEBAUER. Right.

Mr. ALLARD. Uh-huh.

Mr. NEUGEBAUER. I yield back, Mr. Chairman.

Chairman STEWART. Thank you, Mr. Neugebauer.

With that, we come to the conclusion of this hearing. I would like to thank the witnesses for your valuable testimony as well as the Members for their questions.

The Members of the Committee may have additional questions. If that is the case, then we would ask you to respond to those in writing. The record will remain open for two weeks for additional comments and written questions from the Members.

The witnesses are excused with, again, with our thanks, and this hearing is now adjourned.

[Whereupon, at 3:14 p.m., the Subcommittee was adjourned.]

Appendix 1

Answers to Post-Hearing Questions

ANSWERS TO POST-HEARING QUESTIONS

AAA Responses:

1. EPA only approved use of E15 for a fraction of the vehicles on the road, but your testimony indicated that there is a strong likelihood for consumer confusion and misfueling, ultimately leading to vehicle damage. Do you think the measures taken by EPA, in the form of labeling requirements and a misfueling rule, are adequate to address the magnitude of this problem?

   No. The EPA-mandated label is only 3 and 5/8 inches wide, by 3 and 1/8 inches high, which we believe is insufficient to warn motorists of potential problems. This small label may be easily overlooked by motorists among the other stickers and signage on the pump. The risk is even more alarming considering AAA's finding that the vast majority (95%) of consumers are unfamiliar with E15. The combination of insufficient education and inadequate protections at the pump means there is a strong likelihood of consumer confusion and education.

2. A recent report developed for the NMMA found that of the 17 registered sellers of E15, only 11 had correctly labeled their fuel pumps E15. In other words, 35 percent were not complying with the basic labeling standards. Do any of you have confidence that these basic implementation issues will be resolved as E15 becomes more widespread?

   We have not seen a copy of the report. If accurate, it would not inspire confidence that basic implementation issues are being resolved.

3. The last time EPA allowed two types of gasoline to be sold side-by-side at retail stations – when leaded gasoline was phased out in the 1970s – EPA's own statistics reported that more than 20 percent of motorists misfueled their vehicles. This high rate of misfueling occurred despite the fact that EPA mandated physical barriers, such as fill pipe restrictors and smaller nozzles, in addition to pump labels.
   a. Given motorists prior experience with misfueling, do you think that a pump label, as EPA has approved, is sufficient to protect consumers?

      No. As outlined previously, we believe the EPA-approved label is insufficient to protect consumers. The small label may be easily overlooked by motorists and the vast majority of consumers are not familiar with E15. Additional steps, including significant consumer education and the resolution of manufacturer warranty issues are necessary to responsibly protect consumers from the potential impacts of E15.

b. EPA points to the recent introduction of ULSD as a reason that the shift to E15 will go smoothly. Do you agree?

We do not agree. When introduced, ULSD was a new fuel that was compatible with and approved by manufacturers for use in all vehicles. This is very different from E15, which is a new fuel that is only compatible with and approved by manufactures for use in a limited number of vehicles and is explicitly not approved for use in a large number of older vehicles. The risk of motorists misfueling with E15 is significant, there was no similar risk of misfueling with ULSD, which was approved for use in all vehicles.

4. In your testimony, you highlighted the importance of consumer awareness and education with regards to E15. What efforts do you think might be helpful, and what do you think the EPA should have done or could do to better inform and protect the public?

As we have seen with the introduction of other fuels, there are a variety of steps that can be taken to avoid consumer confusion. This ranges from different-sized nozzles (as with the introduction of unleaded gasoline in the 1970s) to clear labeling and branding (as with the introduction of ULSD and E85 "flex fuel"), but could also include audio messages at the pump, different colored handles or any number of other measures. However, the most important step is proper education by regulators and marketers before motorists get to the pump.

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AmericanMotorcyclist.com

March 22, 2013

The Honorable Chris Stewart
Chairman
Subcommittee on Environment
2321 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Stewart:

The American Motorcyclist Association appreciated the opportunity to testify before the Subcommittee on Environment on Feb. 26 at a hearing entitled *Mid-Level Ethanol Blends: Consumer and Technical Research Needs.*

Per your request, please see the AMA's responses to the following questions:

1. Your testimony raised some serious concerns with the Agency's handling of these blender pumps and potentially requiring motorists to buy a minimum of 4 gallons of fuel. Earlier this month, EPA approved a new blender pump configuration, submitted by the Renewable Fuels Association, for general use by retail stations that wish to dispense E15 and E10 from a common hose and nozzle.
    a. Does this change alleviate your concerns about E15 and blender pumps?
    b. Do you think this will provide clarity for filling stations and your members?

AMA response:

On Feb. 7, the EPA posted a new option for retailers on its website's "E15: Misfueling Mitigation Plans" page to try to avoid misfueling by consumers.

Under the new option, retailers who use a blender pump to sell E15 and E10 fuel through the same hose must also have a separate E10/E0 fuel pump. Those retailers would be required to have a label on the blender pump that reads: "Passenger Vehicles Only. Use in Other Vehicles, Engines and Equipment May Violate Federal Law." Retailers would also be required to have signs indicating the location of the dedicated E10-or-lower fuel pump. There would be no minimum-fuel-purchase requirement at that pump.

As mentioned in my testimony, the AMA can only imagine how many motorists and motorcyclists will be lining up at that single pump to get E10-or-lower fuel.

The AMA does not believe this new misfueling mitigation plan will provide clarity to our members and the general public. Another label on a blender pump that already has many labels will not suffice and could be easily overlooked. The plan calls for no physical barriers in the fueling nozzle/receptacle as was provided for when the nation went from leaded to unleaded fuel. History tells us that, even with these physical barriers in place, misfueling still occurred.

Retailers who want to sell E15 also have the option of having a dedicated E15 pump or hose, or a pump that dispenses E15 and higher ethanol blends through a single hose. If a blender pump dispenses multiple fuels that include E15 and higher ethanol blends, the EPA may require a minimum purchase requirement.

Equally important, the AMA has repeatedly expressed concerns to government officials and federal lawmakers about possible damage to motorcycle and ATV engines caused by the inadvertent use of E15 when the new fuel becomes widely available. The AMA also has asked that motorcycles and ATVs be part of any scientific study into the effects of E15 to ensure that the new fuel blend won't damage those engines.

2. A recent report developed for the National Marine Manufacturers Association found that of the 17 registered sellers of E15, only 11 had correctly labeled their fuel pumps E15. In other words, 35 percent were not complying with basic labeling standards. Do any of you have confidence that these basic implementation issues will be resolved as E15 becomes more widespread?

AMA response:

See the answer to question No. 1.

As noted with the survey by the National Marine Manufacturers Association that found 35 percent of the retailers in non-compliance with the current labeling requirements, the AMA believes that enforcement will be more difficult with sequestration.

3. In March of last year, EPA issued a blanket approval of a model E15 misfueling mitigation plan that was submitted by the Renewable Fuels Association for use by stations across the country. Do you agree that the plan is "sufficient?"

AMA response:

Last year, the AMA told the EPA that with E15 now coming into the market, our members who make a concerted effort to fuel their motorcycles or ATVs with E10-or-less fuel, may unknowingly refuel with residual E15 left in a blender-pump hose. A blender pump dispenses different fuel blends through the same hose, such as E10 and E15. When a customer buys E15, as much as a third of a gallon of residual E15 is left in the hose, which can inadvertently get into the next customer's vehicle while fueling with E10.

The EPA said: "In an effort to address this potential misfueling issue, EPA approved an industry-submitted [approach] that requires a minimum purchase of four gallons from blender pumps that dispense both E10 and E15 from the same hose and nozzle. Such an approach would prevent misfueling by diluting any residual E15 left in the hose from the previous sale of E15."

However, the AMA objected to this misfueling mitigation plan because our members' fuel tanks' capacities are normally two-to-three gallons on average. Therefore, the AMA did not believe this plan was sufficient.

4. In your testimony, you highlighted the importance of consumer awareness and education with regards to E15. What efforts do you think might be helpful, and what do you think the EPA should have done or could do to better inform and protect the public?

AMA response:

With the EPA using only one test to determine if E15 is safe for vehicles before granting a waiver, the AMA urges the agency to allow for an independent scientific study by the National Academy of Sciences to occur. We also request that motorcycles and ATVs be included in such study.

Again, thank you for the opportunity to testify before the Subcommittee on Environment and to address your follow up questions. If you have any questions, please do not hesitate to contact me by phone, (202) 742-4301, or by email, wallard@ama-cycle.org.

Sincerely,

Wayne Allard

Wayne Allard
Vice President, Government Relations

arts and sciences by directing scientific cooperative research to develop the best possible combinations of fuels, lubricants, and the equipment in which they are used, and to afford a means of cooperation with the Government on matters of national or international interest within this field.

Please find the questions for the record and respective answers below:

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
Subcommittee on Environment

Hearing Questions for the Record
The Honorable Chris Stewart

Mid-Level Ethanol Blends: Consumer and Technical Research Needs

Mr. Mike Leister

1. The Renewable Fuels Association has insisted that "E15 has been the most aggressively and comprehensively tested fuel in the history of the Agency" and that the "miles driven on E15 equate to 12 round trips to the moon and back without a single failure." Do you agree with these statements, and do you think the single test program relied upon by EPA to grant a waiver is sufficient to provide confidence for drivers?

2. Were any federal agencies involved at the beginning, developmental stages of mid-level ethanol blends research program at the Coordinating Research Council (CRC)? Does CRC continue to conduct research and testing on behalf of Agencies like EPA, the National Renewable Energy Laboratory, and NASA?

3. What are some areas that more research could be conducted in order to better understand the potential impact of E15 and other biofuels that may be introduced in the market? Are there better ways to structure our fuels R&D so that it can provide more confidence as new fuels are introduced into commerce? Whose responsibility is it to fund these tests?

4. The ethanol lobby has been pushing EPA to make mid-level ethanol blends – maybe as high as E30 – the fuel that EPA uses when it certifies engines and vehicles. What impacts could that have for the various affected parties?

1. We disagree with RFA's claim that "E15 has been the most aggressively and comprehensively tested fuel in the history of the Agency". Reformulated gasoline was tested by EPA and Industry to a much greater extent than the few simple research tests conducted on E15. The testing on the additive MMT was at least an order of magnitude greater than E15 and EPA still disapproved that waiver request. Every day RFG and conventional gasoline are tested at refineries and by the current fleet in a manner that commercially available E15 has never been subjected to.

RFA's claim that "miles driven on E15 equate to 12 round trips to the moon and back without a single failure" is truly meaningless when RFA refuses to recognize any failure which is reported. The purpose of vehicle system and component testing is not to accumulate pointless miles traveled but to expose the vehicle and its components to tests that represent as close as possible the conditions that will be seen in the real world. While the EPA/DOE test programs should have been designed to be more representative of the real world, the main point is that additional research has uncovered engine and component problems with E15 in post 2001 vehicles. These problems indicate that EPA did not conduct sufficient testing and that consumers should have very little confidence when using E15 in vehicles that have not been designed for E15 or higher levels of ethanol.

2. Representatives of EPA, DOE, and NREL along with many other stakeholders have attended the Mid-level Ethanol Stakeholders meetings that began in May of 2008, have regularly been held since, and have reported on mid-level ethanol research. Early in the process, EPA pushed for even more comprehensive testing than was conducted by CRC and DOE and NREL participated in the research design of some of the mid-level ethanol research projects. DOE and NREL funding for E15 research was controlled by EPA and as EPA came closer to finalizing their E15 decision, DOE and NREL participation in the CRC projects diminished substantially.
   CRC continues to work on research projects with EPA, CARB, DOE, NREL, RFA, and Growth Energy.

3. The main area for more research is to evaluate more vehicles especially if the proposed fuels are to be used in the existing fleet. It is difficult to definitively test all the vehicles and vehicle components in the US on-road fleet for any new fuel. There is a heavy reliance on statistics and therefore both the EPA and CRC research projects could have benefited from testing greater numbers of vehicles. However, testing even a single vehicle is expensive and time consuming, so every research project has to balance the number of tests versus the cost and time required. To be more confident that the appropriate research sampling and testing is being conducted, it is best to heavily involve the vehicle and vehicle component manufacturers in any research design into any new fuels, biofuels or otherwise, that are intended to be introduced for use by the existing US car fleet. The best way to improve confidence and effectively test all new fuel applications is for the OEMs to evaluate new fuels on their new vehicles as they are being designed and not after the fact.

   Automaker tests are done with components rather than complete vehicles. These tests are cheaper to do, they are faster to do, and multiples can be easily done to get statistical robustness. The only time a whole vehicle is tested is to capture the interaction effects,

and for the program at hand this is calibration, diagnostics and emissions. You can see this philosophy reflected in the CRC testing.

For the E15 waiver decision, EPA decided to ignore the advice of the companies that actually designed the vehicles and vehicle components and elected to follow their own and DOE's "engineering judgment". Simply put government agencies assumed that they knew more than the people that actually design and build cars for a living. The government must rely on industry experts who understand what is required in commercial applications.

It will always be risky to introduce a new fuel into the existing fleet because the vehicles and vehicle components will have not been designed with this new fuel in mind. The safest way to proceed with a new fuel is to have new vehicles designed to use the new fuel. This will ensure compatibility between the fuel and vehicles.

In the past EPA has required the parties requesting a fuel waiver to conduct sufficient research to convince EPA to grant the waiver. We are not sure why the US government elected in this case to not just evaluate the research data but to voluntarily pay for and design the research. As a result it was difficult for the US government to be unbiased when reviewing the research data from projects that they designed and paid for. The U.S. government should not be paying for this type of research.

4. The certification fuel used for US vehicles should be representative of the fuel properties those vehicles are likely to encounter in use. Since new vehicles are certified to meet specific emissions specifications, the use of a certification fuel that does not represent what the vehicle will see over its lifetime results in a distorted representation of the actual vehicle emissions. When setting certification fuel standards, EPA must resist the impulse to aspirationally push a political agenda and stick with real world fuel properties. If the proposed E30 results in a new kind of Flexfuel vehicle that can use E0 to E30, it is unclear how this is an improvement on an E85 FFV. If the goal is "optimization", automakers cannot optimize for E30 fuel any more than they can optimize for E85 fuel, vehicles optimized for these fuels would be dedicated vehicles and, given the scarcity of either E30 or E85, there is very little market for such vehicles.

Thank you for the opportunity to speak with the subcommittee about this important topic.

Appendix 2

Additional Material for the Record

CRC Research on Mid-Level Ethanol Blends

What is CRC?

- The Coordinating Research Council (CRC) is a non-profit organization, established in 1942, that:
  - Directs, through committee action, engineering and environmental studies on the interactions of transportation fuels with vehicles and engines.
- The objective of CRC is:
  - To encourage and promote the arts and sciences by directing scientific cooperative research to develop the best possible combinations of fuels, lubricants, and the equipment in which they are used,
  - To afford a means of cooperation with the government on matters of national or international interest.
- Through CRC, professionals in the automotive and in the energy industries collaborate in research and often coordinate with government agencies such as DOE, EPA and others.

Background -- CRC's Comprehensive E10+ Program

- Drivers for undertaking an E10+ research program
  - RFS mandates
  - Need to assess both vehicle emissions and performance (customer-related) impacts
- Comprehensive program started in 2008 and is still underway
  - Auto and oil industries led development
  - Other stakeholders included through a coordination group
  - CRC program consistent with EPA's June 2008 presentation on waiver approval requirements

EPA's E15 Partial Waivers

- E15 allowed in 2001 and newer model year vehicles
  - Not allowed in: pre-2001 vehicles, all heavy-duty, motorcycles and non-road equipment
- E15 increases ethanol by 50% over earlier permissible levels
  - Auto warranty concerns
  - Auto companies responses to Rep. Sensenbrenner
- Lawsuit filed in DC Circuit Court by several groups
  - Supreme Court likely to decide next steps

Excerpts from Auto Responses

	E15 Warranty	Excerpts from Sensenbrenner Response
Chrysler	No	We are not confident that our vehicles will not be damaged by E15
Ford	No	Ford does not support the introduction of E15 into the marketplace for the legacy fleet
General Motors	No	We are not confident that our vehicles will be undamaged by the use of E15.
Mercedes-Benz	No	Any ethanol blend above E10, including E15, will harm emission control systems in M-B engines
Honda	No	Vehicle engines were not designed or built to accommodate higher concentrations of ethanol
Mazda	No	The record fails to demonstrate that motor vehicles would not be damaged
Toyota	No	Toyota cannot recommend the use of fuel with greater than E10 for Toyota vehicles

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Excerpts from Auto Responses

	E15 Warranty	Excerpts from Sensenbrenner Response
Nissan	No	We are not at all confident that there will not be damage to MY 2001 and later vehicles with E15
Volkswagen	No	Volkswagen agrees that EPA did not conduct an adequate test program when E15 was considered
Volvo	No	The risks related to emissions are greater than the benefits in terms of CO2 when using low-blend E15 for variants that are designed to E10.
BMW	No	The BMW Group engines and fuel supply systems can be damaged by misfueling with E15.
Hyundai	No	The EPA tests failed to conclusively show that the vehicles will not be subject to damage or increased wear.
Kia	No	EPA testing failed to determine that vehicles will not be subject to damage or increased wear.

2012 - 2013 Vehicle Gas Cap Warning

CRC Fuel Systems Durability Study

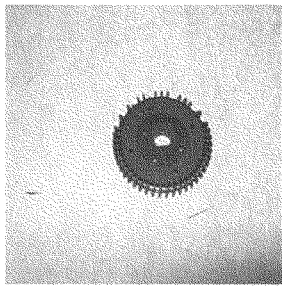
- Objective:
  - Determine if E20 or E15 blends could affect fuel system components which would potentially have a significant customer impact
- Tests conducted in 2 phases
  - Employed established testing procedures widely used within the automotive industry to evaluate and predict new product life
- Components from 5 post-2001 model year vehicles tested in second phase (in model year order):
  - 2001 Chevrolet Cavalier
  - 2003 Nissan Maxima
  - 2004 Ford Focus
  - 2004 Ford Ranger
  - 2007 Nissan Altima

How Were the Tests Conducted?

- Tests were done on fuel pumps and fuel level systems on popular post-2001 gasoline light-duty vehicles with actual fleet penetration likely greater than 29 million vehicles
- Fuel Pump System testing protocols
  - Soak (i.e., immersion)
  - Endurance test (i.e., "continuous" operation)
- Fuel Level System testing protocols
  - Measured changes in electrical signals going to fuel gauge and check engine light

Fuel Pump Durability Results

- **Some pump systems passed with no problems on E15**
- **Other pump systems failed or exhibited other adverse effects on E15, but not E10 or E0**
- **E15 caused swelling in some pump impellers that moves fuel into the fuel line**
- **Showed obvious loss of vanes as a result of jamming against its housing that caused flow to halt**



Example: Vanes actually broke off portions of the impeller

Fuel Level System Durability Testing Results

- **Some systems operated on E15 with no problems**
- **Others resulted in "dirty" signals with E15, but not E10 or E0**
- **Fuel level system units must have a clean signal without spikes or open circuits. Dirty signals can cause erratic/false fuel gauge readings and/or malfunctioning on-board diagnostics (i.e., check engine lights).**

Examples:

Acceptable signal

Unacceptable "dirty" signal

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CRC Engine Durability Study

- Objective:
  - Determine if E20 or E15 blends could affect engine components (e.g., valves, valve seats and guides) which would potentially have a significant customer impact.

- 8 Vehicles Tested (in duplicates):
  - 2001 Honda CR-V, 2.0L I4
  - 2002 VW Jetta, 2.0L I4
  - 2004 Toyota Scion xA, 1.5L I4
  - 2005 Chevrolet Colorado, 3.5L I5
  - 2007 Ford Edge, 3.5L V6
  - 2007 Dodge Ram, 5.7L V8
  - 2009 Dodge Caliber, 2.4L I4
  - 2009 Chevrolet Aveo, 1.6L I4

Engine Durability Test Results
(Note: Vehicle No. Unrelated to Listing Order in Prior Slide)

Description (All Duplicates)	E20	E15	E0
Vehicle 1	Passed	Not Req'd	Not Req'd
Vehicle 2	Failed	Failed	Passed
Vehicle 3	Failed	Failed	Passed
Vehicle 4	Deemed Pass*	Not Req'd	Not Req'd
Vehicle 5	Deemed Pass*	Not Req'd	Not Req'd
Vehicle 6	Deemed Pass*	Not Req'd	Not Req'd
Vehicle 7	Passed	Not Req'd	Not Req'd
Vehicle 8	Failed	Failed	Failed**

***Deemed Pass vehicles did not pass all specified criteria but were not tested on E15 or E0 after a detailed review of the data with the respective OEM and CRC concluded that fuel was not a factor.**

**** Failure was less severe than on E20 or E15.**

CRC Engine Durability Study – Conclusions

- The CRC engine durability study showed that some engines passed on E20 and E15.
- However, two popular gasoline engines used in light-duty automotive applications of vehicles from model years 2001 through 2009 failed with mechanical damage when operated on intermediate-level ethanol blends (E15 and E20).
  - Valve and valve seat damage
  - Consequence: Loss of compression, excess emissions, poor performance, engine repair
- Millions of vehicles on the road today have the same or characteristics similar to the two that failed.

Other CRC Mid-Level Ethanol Blends Projects

- **Evaporative Emissions Control Systems Durability on E20**
  - 2 of 10 vehicles showed increased evaporative emissions, but did not exceed certification standards
- **On-Board Diagnostics (OBD)**
  - Continued investigation of potential for false check engine light illuminations
- **Overview Report on the Entire CRC and Other Mid-Level Ethanol Blends Programs**

CRC Research on Mid-Level Ethanol Blends

Conclusions

- We have great confidence in the automotive engineers who sit on CRC committees and who design engines, emissions control systems and fuel systems to come up with the right tests to evaluate the effects of E15 in our customers' vehicles.
- CRC has been doing this kind of research for over 70 years – often with the participation and support of the ethanol industry and government agencies. CARB, EPA, RFA, DOE, Growth Energy, ASTM, and several states have all chosen CRC to execute similar projects over the years, so clearly CRC work is highly valued.
- CRC Final Reports available at http://www.crcao.org

CRC PROJECT CM-136-09-1B

Full report available at *www.crcao.com/reports/recentstudies2012/CM-136-09-1B%20Engine%20Durability/CRC%20CM-136-091B%20Final%20Report.pdf*

CRC Project CM-136-09-1B

INTERMEDIATE-LEVEL ETHANOL BLENDS ENGINE DURABILITY STUDY

April 2012

COORDINATING RESEARCH COUNCIL, INC.
3650 MANSELL ROAD·SUITE 140·ALPHARETTA, GA 30022

EXECUTIVE SUMMARY

The goal of the Coordinating Research Council (CRC) Project CM-136-09-1B, "Intermediate-Level Ethanol Blends – Engine Durability Study," was to investigate the effects of two intermediate-level ethanol blends on several models of current, on-road, non-Flexible-Fuel Vehicles (non-FFVs).

The motivation to conduct the study originated in response to the 2007 Energy Independence and Security Act which mandates 36 billion gallons of renewable fuels be used by 2022. Since the passage of this Act, ethanol production has risen dramatically. This mandate, in addition to marginal implementation of E85, has produced interest in increasing the percentage of ethanol that can be used in motor gasoline for conventional-fuel vehicles beyond the current limit of 10 volume percent (E10). Decisions in 2010 and 2011 by the U.S. EPA to allow up to 15 volume percent ethanol in motor gasoline for 2001 and later model passenger car and light-duty trucks has increased the importance of this study.

The objective of this durability study was to identify possible engine component wear caused by additional ethanol content in the fuel using an engine test cycle employed by an original equipment manufacturer (OEM) member of CRC to test for engine durability. The engines were tested with E20, and then, as appropriate, E15 and E0, for 500 test cycles, corresponding to 500 hours, with monitoring at regular intervals. To test the effect of ethanol on in-use engine durability, vehicles with engines of various valvetrain types were chosen. FEV and the CRC project panel agreed to test eight vehicle types which represented a selection of various valvetrain type engines in popular light-duty automotive applications in non-FFVs from model year 2001 through 2009.

The different types of vehicles of various engine configurations, sizes, valvetrain types and mileage were tested with E20, then on E15 if they failed on E20, and then on E0 if they failed on E15. Vehicles which passed the test on E20 were not retested on lower ethanol blends. "Pass" and "Fail" criteria for five different categories were determined at the beginning of the program and were assessed on each engine after completion of the durability test. These five categories are: emissions during the FTP75 test, diagnostic trouble codes (DTCs), valve clearance, compression and leakage. An engine was deemed to have failed the test if it failed in at least one of these five categories. Details for the specifications of the pass/fail criteria can be found in Section D.3.8 of this report.

Each chosen engine was tested in duplicate on each fuel. Eight different vehicle types (two samples of each type) were tested with E20. Results of the E20 testing are as follows: three vehicle types (five vehicle samples) failed the durability testing on E20; three other vehicle types (four vehicle samples) did not pass all specified criteria after the 500 hour durability test, but were waived after a detailed review of the data with the respective OEM contact. These vehicles are shown as waived in the table in Figure 1. Further details as to why the waiver was received can be found in Section E of this report.

When an engine failed the durability test on E20, another set of duplicate vehicles with the same engine type was procured from the used car market and scheduled for durability testing with E15. When an engine failed on E15, then another set of duplicate vehicles with the same engine type was procured from the used car market and scheduled for durability testing with E0. In total, 28 engines from eight different vehicle types were tested during this study (16 on E20, 6 on E15 and 6 on E0).

The failed and waived engines in the overview table in Figure 1 have an associated letter or letters in parentheses. The key to explain the meaning of these letters are as follows:

- E = Emissions during EOT FTP75 testing
- D = Diagnostic Trouble Code (DTC) detected at EOT
- V – Valve clearance measurement on at least one valve out of OEM specification at EOT
- C = Compression measurement on at least one cylinder out of OEM specification at EOT
- L = Leakage measurement on at least one cylinder above 10% at EOT

Figure 1: Overall Results

Sample	E20		E15		E0	
Vehicle	Sample A	Sample B	Sample C	Sample D	Sample E	Sample F
Vehicle 1	Pass	Pass				
Vehicle 2	Fail (L)	Fail (L)	Fail (E)	Fail (L)	Pass	Pass
Vehicle 3	Pass	Fail (V,L)	Fail (L)	Pass	Pass	Pass
Vehicle 4	Waived (L)	Pass				
Vehicle 5	Waived (E,D)	Pass				
Vehicle 6	Waived (L)	Waived (L)				
Vehicle 7	Pass	Pass				
Vehicle 8	Fail (E,C,L)	Fail (C,L)	Fail (E,L)	Fail (C,L)	Fail (E,C,L)	Fail (E,L)

Waived = Vehicle did not pass all specified criteria after the 500 hour durability test, but was not retested on E15 or E0 after a detailed review of the data with the respective OEM contact and concurrence by CRC.

The three vehicle types which failed on E20 were then tested with E15. All three vehicle types also failed this testing. The vehicles which failed the E15 durability test were then tested with E0 to ensure that these failures were not associated with any factors other than the concentration of ethanol in the fuel. In summary, 12 out of 28 tested engines were deemed to have failed the prescribed durability test.

Different types of failures were observed throughout the testing. The failed engines were sent to the respective OEM for a detailed teardown analysis. FEV was not involved in the teardown activities. Any statements with regard to the results of the engine teardown analyses were provided to FEV in writing by the respective OEM technical contact to be included in this report.

The test results and exhibited failures of the various vehicles can be summarized as follows:

Vehicle 1: (Both samples passed E20)

No issues were detected with either of the Vehicle 1 engines tested on E20. No further testing on E15 or E0 was conducted.

Vehicle 2: (Both samples failed E20, E15)

Both Vehicle 2 engines tested on E20 failed the leakage criterion. Both vehicle 2 engines tested also failed on E15, one of them because of increased emissions at EOT and the other one failed the leakage criterion. Both Vehicle 2 engines tested on E0 passed all criteria. The cylinder head teardown analysis conducted by the OEM on all failed engines of Vehicle 2 revealed uneven wear and pitting of the intake valve seats as the root cause for the increased leakage.

Vehicle 3: (Samples showed mixed results on E20 and E15, both passed E0)

Testing Vehicle 3 engines showed mixed results. One out of two engines tested on E20 failed the test and one out of two engines tested on E15 failed the test. Both Vehicle 3 engines tested on E0 passed all criteria. The teardown analysis conducted by the OEM on both failed Vehicle 3 engines revealed widened exhaust valve seats on all cylinders and wear on several intake valve seats. The engine which failed on E20 also showed valve lash degradation.

The OEM examined internal historical production records and these revealed that there had been changes in the intake valve seat material used for this engine following its initial production years. The failed engines were equipped with lower grade material valve seats which were not considered robust enough to ethanol blends higher than E10. The OEM technical contact commented that the test results of this study have validated this position. Further details about the OEM commentary can be found in Section E.4.7 of this report. It should also be noted that the OEM changed to the improved valve seat material in later model years of the investigated engine.

Vehicle 4: (One sample passed, the other was waived on E20)

Mechanically there were no issues detected with either of the Vehicle 4 engines tested on E20 with the exception of a leakage measurement slightly above 10% on only one cylinder of one engine (the second engine passed all criteria including leakage). An engine teardown analysis conducted by the OEM revealed no issues with the engine with the slightly increased leakage.

Both engines showed elevated emissions at EOT during the simulated engine dynamometer FTP75 test. The catalyst of Sample A engine was sent to the OEM who installed it on another vehicle and tested that vehicle on a vehicle chassis emission roll. A FTP75 test was conducted with the vehicle with the reinstalled catalyst, and it passed all emission constituents.

Sample B showed a similar elevated emission behavior. For Sample B the OEM reinstalled the engine and catalyst into the vehicle and conducted a vehicle chassis roll FTP75 test. The vehicle passed the emission test for all exhaust emission constituents.

Upon review of the results and recommendation by the OEM technical contact, the CRC group waived this engine from further testing.

Vehicle 5: (One sample passed, the other was waived on E20)

One Vehicle 5 engine passed the testing on E20 for all criteria. The other engine passed all criteria in the engine dynamometer test cell, but failed the EOT vehicle emission test. In addition, a diagnostic fault code, P0420, was set when the engine was reinstalled in the vehicle. The fault code was not present during engine dynamometer testing. The P0420 code indicates low catalyst efficiency; the service manual instructs replacement of the catalyst. The vehicle completed the EOT chassis roll FTP75 with this code active; the catalyst was not replaced and the vehicle failed the EOT FTP75 vehicle emission test.

The emission results were discussed with the OEM. The OEM indicated known issues with vehicle 5 catalysts; thus, they are offering extended warranty for catalyst replacement. It was decided not to retest this vehicle type on E15 and E0 because this failure was deemed not to be caused by the increased ethanol content. Another factor in this decision was that the second vehicle sample of this vehicle type passed all criteria. No teardown analysis was conducted by the OEM as the measured valve clearance, compression and leakage on both tested engines were all within specifications.

Vehicle 6: (Both samples waived on E20)

Both Vehicle 6 engines tested on E20 failed the leakage criterion by a small margin, but passed all other criteria including EOT vehicle emission tests. The OEM completed cylinder head teardowns on both engines. It was noted that the valves showed carbon impregnation, but overall the valve seats did not show abnormal deposits or wear and

were acceptable to the OEM. Upon recommendation by the OEM both engines were waived from further testing.

Vehicle 7: (Both samples passed on E20)
No issues were detected with either Vehicle 7 engine tested on E20. No further testing on E15 or E0 was conducted.

Vehicle 8: (All engines failed on E20, E15 and E0)

All six Vehicle 8 engines tested on E20, E15 and E0 failed the test. All failed the leakage criterion. Both engines tested on E20, one engine tested on E15 and one engine tested on E0 failed the compression criterion. One engine tested on E20, one engine tested on E15 and both engines tested on E0 failed the emission criterion. The second E20 engine completed the 500 hour test with failed leakage and failed compression criteria, but was not reinstalled into the vehicle as it experienced a catastrophic failure during an EOT WOT test which was conducted in the engine dynamometer test cell upon request by the respective OEM technical contact.

Teardown analyses conducted by the OEM on the failed engines revealed heavier pitting on the exhaust valve seats of the engines run on E20 and E15. Moderate wear was noted on intake valve seats and normal wear was noted on intake and exhaust valves. No issues were noted on engine bearings, pistons and piston rings. The teardown analyses conducted by the OEM revealed that the engines which ran on E20 and E15 showed higher wear and heavier pitting of the exhaust valves compared to the engines which ran on E0. However, pitting on the E0 engines was still severe enough that they also failed the leakage criterion.

Upon examination of the test results and engine design, the OEM determined that the valvetrain design inhibited valve rotation at lower engine speeds and that the limited amount of time spent over 3500 rpm in the test combined with the valve spring design led to abnormally high valve seat wear for all of the fuel combinations due to inhibited valve rotation. Unlike other engines in the test, this particular engine's spring design is more sensitive to the rpm threshold and would be better suited for a test with intervals at higher speeds. In retrospect, it would be expected for the engine to experience abnormal valve seat wear during this test cycle, regardless of fuel composition. Due to this reason, Vehicle 8 is shown in a different color in the overview results (see Figure 1).

It should be noted that the engine which experienced the catastrophic failure had severe damage in one cylinder, but the teardown analysis results for that cylinder were not considered in the final analysis for this report as the EOT WOT test was not part of this CRC Intermediate-Level Ethanol Blend Engine Durability Study and was only conducted upon a special request by the respective OEM.

Conclusions

After completion of all testing and detailed review of the experienced failure modes, the following conclusions can be drawn:

- Out of eight different tested engine types, one had a design that was (in retrospect) inappropriate for the test cycle, two failed on E20 and E15, and five passed on E20 and by assumption E15 and E0 (see Figure 1).
- Out of the two failed tested engine types, both successfully completed the reference testing on E0.
- There is an 11% chance that all three E15 failures (two with one vehicle type and one with another) would have occurred if failure were independent of ethanol. The results for E20 are the same. Combining the E15 results with the E20 results, there is a 7% chance that all six failures (two E15 and two E20 with one vehicle type and one E15 and one E20 with another) would have occurred with ethanol containing fuels if failure were independent of ethanol.
- For the failed engine which also failed on E0 reference fuel, the failures can not be directly linked to the ethanol content. The design of the engine interacting with the test cycle is the primary reason cited by the OEM maker for the observed failures.
- The observed failures do not show that specific valvetrain types are more or less sensitive to ethanol content.
- The majority of the failures can be linked to issues with valve seats, either related to material or wear/deformation.

The study has shown that two popular gasoline engines used in light-duty automotive applications of vehicles from model years 2001 through 2009 failed with mechanical damage when operated on intermediate-level ethanol blends (E15 and E20).

DURABILITY OF FUEL PUMPS AND FUEL LEVEL SENDERS IN NEAT AND AGGRESSIVE E15, CRC REPORT NO. 664

Full report available at *www.crcao.org/reports/recentstudies2013/CRC%2020664%20[AVFL-15a]/AVFL%2015a%20[CRC%20664]%20Final%20Report%20only.pdf*

CRC Report No. 664

DURABILITY OF FUEL PUMPS AND FUEL LEVEL SENDERS IN NEAT AND AGGRESSIVE E15

CRC Contract No. AVFL-15a

January 2013

COORDINATING RESEARCH COUNCIL, INC.
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Preface

The Advanced Vehicle/Fuel/Lubricants Committee of the Coordinating Research Council, Inc. retained the services of The Testing Services Group, LLC (TSG, Lapeer, MI) to conduct a series of experiments that evaluated the compatibility and durability of fuel pumps and fuel level senders in mid-level ethanol blends under CRC Project No. AVFL-15a. This project was an extension of contract work conducted under CRC Project No. AVFL-15. The TSG contract for AVFL-15a was active from April 2011 to October 2012. Gage Products Co. of Ferndale, MI provided test fuels for the study. This report presents analyses of the AVFL-15a data collected by TSG. Documentation of testing protocols and results were provided by TSG staff, and the data analysis report presented here was prepared by the AVFL-15a Project Panel members listed in Appendix A1.

Executive Summary

This report describes an extension of an earlier scoping study that investigated how gasoline containing 20 percent ethanol by volume (E_{20}) might affect wetted automotive fuel system components such as pumps, dampers, level senders, and injectors. The scoping project (CRC Project No. AVFL-15) was used to identify areas where further testing should be performed. This study (CRC Project No. AVFL-15a) was designed to add depth to those initial findings, and explore potential impacts of gasoline containing 15 percent ethanol by volume (E_{15}). Both projects were conducted under the direction of the Advanced Vehicle/Fuel/Lubricants (AVFL) Committee of the Coordinating Research Council (CRC).

The primary test fuels for this study were E_{15} and an aggressive blend of E_{15} (E_{15a}). E_{15a} was formulated referencing the SAE specification J1681 to represent the worst case blends of gasoline and 15 volume percent ethanol that might be found in the field. E_{10} and E_0 test fuels were also incorporated into this study in a second phase as reference points to assess the relative performance of the E_{15} and E_{15a} test blends. Automobile manufacturers were contacted at the start of the scoping study in order to develop a candidate list of vehicles for testing. Based on manufacturer suggestions, 15 designs from different manufacturers spanning the 1996 to 2009 model years were selected. It is estimated that the design selections from the original scoping study represented at least 37 million vehicles with components and systems similar in construction and materials. Based on the scoping study, several fuel pumps and fuel level senders were selected for testing in the current work. The subset of parts used in the current work represents approximately 29 million 2001-2007 vehicles.

Table E.1 describes the test matrix and general content of the AVFL-15a Phase 1 study. Following completion of Phase 1, additional testing was conducted to provide context for the initial fuel pump results and to broaden the fuel types and fuel pump designs evaluated. The test matrix for Phase 2 is shown in Table E.2. Teardown analysis was done on the fuel pumps from both phases of the program.

The protocols for testing fuel pumps and senders - fuel pump endurance aging, soak durability, and tear down analyses; fuel level sender resistance and full sweep aging - followed the procedures used in the original scoping study. The testing procedures were based on existing SAE and USCAR protocols which are used in the automotive industry to predict new product life.

Table E.1. CRC Project No. AVFL-15a Phase 1 Test Matrix			
Test Protocol	**No. of Designs Tested**	**Test Articles per Design**	**Fuel Types**
Fuel Pump Testing			
Endurance Aging	2	6	E_{15} & E_{15a}
Soak Durability	2	6	E_{15} & E_{15a}
Fuel Level Senders			
Fuel Resistance	3	6	E_{15} & E_{15a}
Full Sweep	3	6	E_{15} & E_{15a}

Table E.2. CRC Project No. AVFL-15a Phase 2 Test Matrix			
Test Protocol	**No. of Designs Tested**	**Test Articles per Design**	**Fuel Types**
Fuel Pump Testing			
Endurance Aging	1	6	E_0
Soak Durability	3	6	E_0 E_{10} & E_{15a}

Two different test protocols were used to evaluate fuel pump performance. The soak durability testing evaluated the fuel pump's response to test fuels while in a static condition for 12 weeks interrupted only by eight, brief, flow tests. The endurance aging program investigated potential fuel pump failure mechanisms resulting from continuous operation. These pumps were aged for 3,000 hours of continuous operation at temperatures varying between 40° C and 60° C, interrupted only by three, brief, flow tests. 3,000 hours represents ~90,000 miles at a mean of 30 miles per engine hour; 30 miles per engine hour is an approximate conversion that comprehends engine time at idle, driving at lower city speeds and at higher highway speeds (see also reference **E1**).

Fuel level senders were tested using two different protocols: a fuel resistance aging protocol and a full sweep aging protocol. The fuel resistance aging involved cycling the powered level senders in test fuel at one to two seconds per cycle for 250,000 cycles, followed by soaking unpowered for one week. This process was repeated until one million cycles and four weeks of soak had been accumulated. The full sweep aging protocol involved cycling the powered level senders in test fuel at a rate of one cycle per second for five million cycles.

Results from this study showed that the pump soak test could discriminate the interaction of fuel pumps with test fuel. Some pump design - fuel combinations had no deviations in performance while other pump design-fuel combinations led to pump failures. One fuel pump model, currently in

use in the field, seized in almost every replicate of the pump soak test when either neat or aggressive E_{15} was used as test fuel, but pumps of this model did not fail on any replicate of the same test when either E_0 or E_{10} was used as test fuel. There are pump designs (currently in use in the field) that did not seize in the fuel pump soak test, but did exhibit statistically significant flow loss when tested with neat or aggressive E_{15}. While statistically significant, none of those pumps had sufficient flow loss that vehicle performance would degrade in ways customers would be likely to observe, nor was the flow shift statistically significantly different from the flow shift observed on E_0 fuel.

The pump endurance test could sort fuel pumps by their interaction with test fuel; some pump design-fuel combinations had no deviations in performance while other pump design-fuel combinations led to pump failure. One fuel pump model, currently in use in the field, seized in almost every replicate of the pump endurance test when either neat or aggressive E_{15} was used as test fuel, but did not fail on any replicate of the same test when E_0 was used as test fuel. Another design of pump, currently in use in the field, was not impacted by mid-blend ethanol in the endurance test. Exposure to E_{15} or aggressive E_{15} caused dimensional changes in all impellers. Depending on pump model, the standard deviation of thickness was approximately 2 to 27 times greater in E_{15} than in E_0 at the end of the soak test.

The tests showed issues with the performance of the fuel level senders when tested with the E_{15} and E_{15a} blends. Both the E_{15a} and E_{15} blends had three instances of significant signal defects. The significant signal defects experienced (consumer observable resistance spikes) could potentially cause interference with proper OBDII function. While not consistent and not found in all samples tested, the results indicate some effect of the E_{15} and E_{15a} blends on sender operation.

This study in conjunction with the prior scoping study has found that some fuel systems in modern vehicles survive testing in mid-blend ethanol fuels, while others will experience complete failures that would prevent operation. The fuel pumps and level senders that failed or exhibited other effects during testing on E_{15} and E_{15a} are used on a substantial number of the 29 million 2001 – 2007 model year vehicles represented by the components evaluated in this report.

LETTER TO SUBCOMMITTEE CHAIRMAN CHRIS STEWART FROM MATT GRUHN, MRAA PRESIDENT, MARINE RETAILERS ASSOCIATION OF THE AMERICAS

Marine Retailers Association of the Americas

Minneapolis Office, 9213 Telford Crossing, Minneapolis, MN 55443
Phone 763.315.8043 Email: matt@mraa.com

Washington Office, 529 Bay Dale Court, Arnold, MD 21012
Phone 301-858-7149 Email: larry@mraa.com

February 26, 2013

The Honorable Chris Stewart, Chairman
Environment Subcommittee
Committee on Science, Space, and Technology
2321 Rayburn House Office Building
Washington, D.C 20515

Dear Mr. Chairman:

The Marine Retailers Association of the Americas greatly appreciates your leadership in looking into the effects of mid-level ethanol on consumers and wants to submit this letter as a follow up to your hearing on "Environment on Mid-level Ethanol Blends: Consumer and Technical Research Needs."

MRAA is the trade association of small businesses in North America that sell and service new and pre-owned recreational boats, provide access to the waters through marinas, access ramps, and boat yards, and sell boat accessory products and parts.

In an attempt to reduce our nation's reliance of foreign sources of oil, the Federal government has supported numerous policies over the past 30-40 years to increase the efficiency of fuel usage from increases to CAFÉ and subsequent technical engineering standards of engines to the formulation of fuel and gasoline itself. One of the more controversial actions is the passage of the Renewable Fuel Standards, which mandates the usage of corn-based ethanol in gasoline. Congress later expanded the RFS requirement in 2007 to 15 billion gallons.

The U.S. Environmental Protection Administration allowed the introduction of E15 for use in model year 2007 automobiles. The EPA did not grant a waiver for use of E15 fuel in model years prior to 2001, boats, motorcycles, or other non-road engines.

As a result, boating consumers are confused as to what is appropriate for their boats. Even at 10 percent ethanol levels, our members are seeing major repair problems with outboard motors and inboard engine fuel systems, including gasoline tanks and fuel lines. E15, or 15 percent ethanol, greatly exacerbates those problems. Boats oftentimes are not used for several weeks at a time and fuel tanks are filled for winter storage. In these common scenarios, ethanol breaks down into sludge that clogs fuel lines and damages engines. This ethanol breakdown causes safety concerns for boaters when engines quit working away from port.

It is clear the EPA has forced usage of corn-based ethanol before thoughtful research has been conducted and has failed to meet its civil obligation to provide for consumer safety. Most alarming to MRAA is that more than 90% of boating and fishing consumers fill their boat tanks with gas at on-road service stations at the same time as their cars, and they are inadvertently using the higher ethanol levels in boats. Again, this is extremely detrimental to the health of the boat and the safety of the boater.

MRAA believes the first step in introducing a new product is complete research and testing on how it would impact consumers and their vehicles, boats, and other small engines. The new fuel or fuel additive should not be approved for usage that is not appropriate. The next step is to conduct a national consumer education campaign that fully explains how the new fuel can be used that includes proper fueling and mis-fueling guidelines. Consumer education to date and safeguards at the pump are woefully inadequate with use of a small label on a gas pump the extent of a public campaign. The label is clearly insufficient and is often overlooked by consumers.

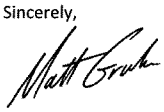
The EPA has failed in all of these steps.

It is vital for the EPA to work with Congress, consumers, and industry stakeholders to ensure the safety of new products.

MRAA asks Congress to intercede with the EPA to prevent the sale of E15 until proper research has been completed to ensure the protection of boating consumers.

Thank you for your leadership. We look forward to working with you.

Sincerely,



Matt Gruhn
MRAA President

LETTER TO HON. LISA JACKSON, ADMINISTRATOR, ENVIRONMENTAL PROTECTION AGENCY, FROM HON. WAYNE ALLARD, VICE PRESIDENT, GOVERNMENT RELATIONS, AMERICAN MOTORCYCLIST ASSOCIATION

AMA
AMERICAN MOTORCYCLIST ASSOCIATION

101 Constitution Avenue NW, Suite 600W, Washington, DC 20001
T (202) 742-4301 F (202) 742-4304

AmericanMotorcyclist.com

June 20, 2012

The Honorable Lisa P. Jackson
Administrator
Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Administrator Jackson:

The American Motorcyclist Association seeks clarification on the U.S. Environmental Protection Agency's Misfueling Mitigation Plans. Specifically, our concerns are with possible misfueling due to residual fuel left in a blender pump hose used to dispense 15 percent ethanol blend (E15) gasoline.

Founded in 1924, the AMA is a not-for-profit association and is the premier advocate of the motorcycling community, representing the interests of millions of motorcyclists and all-terrain vehicle (ATV) riders. Our mission is to promote the motorcycle lifestyle and protect the future of motorcycling.

It is our understanding that the EPA is aware of our concern about residual fuel left in a blender pump hose to dispense E15. With E15 gasoline, our members who make a concerted effort to fuel their motorcycles or ATVs with E10-or-less gasoline may be unknowingly refueling with residual fuel left in the hose.

Unlike an automobile or SUV with a large fuel tank, the residual fuel left in a fueling hose could be detrimental to the performance of motorcycle or ATV engines due to the small size of their fuel tanks and the higher concentration of ethanol that would therefore be present in the fuel.

In addition, the use of E15 will lower fuel efficiency and possibly cause premature engine failure. Use of E15 fuel voids many manufacturer warranties. In off-road engines, the effects can even be dangerous for users.

It is incumbent on the EPA to safeguard the nation's fuel supply for users, including motorcyclists and ATV users, before the E15 gasoline enters the marketplace. For the aforementioned reasons, the AMA supports H.R. 3199, which will require the EPA to seek independent scientific analysis on the effects of E15 gasoline on engines as soon as possible.

What specifically does the EPA recommend that motorcyclists and ATV users do when using a blender pump that dispenses E15 gasoline?

Thank you for your time and consideration of our concerns. If you have questions about this request, please do not hesitate to contact me by phone, (202) 742-4301, or by email, wallard@ama-cycle.org.

Sincerely,

Wayne Allard

Wayne Allard
Vice President, Government Relations

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL VEHICLE AND FUEL EMISSIONS LABORATORY
2565 PLYMOUTH ROAD
ANN ARBOR, MICHIGAN 48105-2498

August 1, 2012

OFFICE OF
AIR AND RADIATION

Mr. Wayne Allard
Vice President, Government Relations
101 Constitution Avenue, NW, Suite 800W
Washington, DC 20001

Dear Mr. Allard:

Thank you for your June 20, 2012 letter expressing concerns with the possible misfueling of motorcycles and all-terrain vehicles (ATVs) with gasoline-ethanol blended fuels containing more than 10 volume percent (vol%) up to 15 vol% ethanol (E15). Specifically, you were concerned about the possibility of motorcycle and ATV riders inadvertently misfueling due to residual E15 left in a blender pump hose used to dispense both E15 and a gasoline-ethanol blended fuel containing no more than 10 vol% ethanol (E10). The Administrator has asked me to respond to your letter.

EPA appreciates your concern about residual fuel remaining in a blender pump hose that dispenses E15 and E10 from the same hose. EPA recognized the potential impact of E15 on nonroad vehicles, engines, and equipment when it denied the E15 Waiver Request for nonroad vehicles, engines, and equipment which includes motorcycles and ATVs,[1] and the Agency has specifically addressed this residual fuel issue in its recent approvals of the first E15 Misfueling Mitigation Plans (MMPs).[2] In the approval letters sent to companies submitting MMPs,[3] EPA requires that retail stations that own or operate blender pumps either dispense E15 from a dedicated hose and nozzle if able or, in the case of E15 and E10 being dispensed from the same hose, require that at least four gallons of fuel be purchased to prevent vehicles and engines with smaller fuel tanks from being exposed to gasoline-ethanol blended fuels containing greater than 10 vol% ethanol. Additionally, EPA is requiring that retail stations that offer E10 and E15 from the same hose and nozzle use additional labeling to inform consumers about the minimum purchase requirement. EPA also noted that some retailers may need to take additional steps to help ensure that consumers heed the minimum purchases requirements.

Since motorcyclists and ATV users, as you suggest, have relatively small fuel tanks, they should pay careful attention to the labeling of blender pumps to ensure that an appropriate fuel is chosen, in this case E10 or E0. As you are probably aware, the E15 Compliance Survey, required both as a condition of

[1] See 75 FR 68094 (November 4, 2010).
[2] For more information, please see the E15 Misfueling Mitigation Plan web site located at: http://www.epa.gov/otaq/regs/fuels/additive/e15/e15-mmp.htm.
[3] A sample letter sent to approved MMP submitters may be found here: http://www.epa.gov/otaq/regs/fuels/additive/e15/documents/e15-mmp-approval-letter-sample.pdf. Please note that this letter is only a sample and actual letters sent to companies may vary depending on a company's specific circumstances.

the E15 Partial Waiver Decisions[5] and EPA regulations found at 40 CFR 80.1502, will ensure that blender pumps are properly labeled. As we suggested in the E15 Misfueling Mitigation Rulemaking, we will closely follow the results of the E15 Compliance Survey to determine whether additional misfueling mitigation measures are necessary.

Again, thank you for your letter, and we look forward to working with you and other affected stakeholders to ensure that E15 is introduced into the marketplace safely and responsibly. If you have any questions or comments regarding this matter, please contact Robert Anderson of my staff at (202) 343-9718.

Sincerely,

Byron Bunker, Acting Director
Compliance Division

[5] See 75 FR 68150 (November 4, 2010) and 76 FR 68150-68151 (January 26, 2011).

LETTER TO SUBCOMMITTEE CHAIRMAN CHRIS STEWART FROM HON. WAYNE ALLARD, VICE PRESIDENT, GOVERNMENT RELATIONS, AMERICAN MOTORCYCLIST ASSOCIATION

AMERICAN MOTORCYCLIST ASSOCIATION
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AmericanMotorcyclist.com

March 22, 2013

The Honorable Chris Stewart
Chairman
Subcommittee on Environment
2321 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Stewart:

The American Motorcyclist Association appreciated the opportunity to testify before the Subcommittee on Environment on Feb. 26 at a hearing entitled *Mid-Level Ethanol Blends: Consumer and Technical Research Needs.*

Per your request, please see the AMA's responses to the following questions:

1. Your testimony raised some serious concerns with the Agency's handling of these blender pumps and potentially requiring motorists to buy a minimum of 4 gallons of fuel. Earlier this month, EPA approved a new blender pump configuration, submitted by the Renewable Fuels Association, for general use by retail stations that wish to dispense E15 and E10 from a common hose and nozzle.
    a. Does this change alleviate your concerns about E15 and blender pumps?
    b. Do you think this will provide clarity for filling stations and your members?

AMA response:

On Feb. 7, the EPA posted a new option for retailers on its website's "E15: Misfueling Mitigation Plans" page to try to avoid misfueling by consumers.

Under the new option, retailers who use a blender pump to sell E15 and E10 fuel through the same hose must also have a separate E10/E0 fuel pump. Those retailers would be required to have a label on the blender pump that reads: "Passenger Vehicles Only. Use in Other Vehicles, Engines and Equipment May Violate Federal Law." Retailers would also be required to have signs indicating the location of the dedicated E10-or-lower fuel pump. There would be no minimum-fuel-purchase requirement at that pump.

As mentioned in my testimony, the AMA can only imagine how many motorists and motorcyclists will be lining up at that single pump to get E10-or-lower fuel.

The AMA does not believe this new misfueling mitigation plan will provide clarity to our members and the general public. Another label on a blender pump that already has many labels will not suffice and could be easily overlooked. The plan calls for no physical barriers in the fueling nozzle/receptacle as was provided for when the nation went from leaded to unleaded fuel. History tells us that, even with these physical barriers in place, misfueling still occurred.

Retailers who want to sell E15 also have the option of having a dedicated E15 pump or hose, or a pump that dispenses E15 and higher ethanol blends through a single hose. If a blender pump dispenses multiple fuels that include E15 and higher ethanol blends, the EPA may require a minimum purchase requirement.

Equally important, the AMA has repeatedly expressed concerns to government officials and federal lawmakers about possible damage to motorcycle and ATV engines caused by the inadvertent use of E15 when the new fuel becomes widely available. The AMA also has asked that motorcycles and ATVs be part of any scientific study into the effects of E15 to ensure that the new fuel blend won't damage those engines.

2. A recent report developed for the National Marine Manufacturers Association found that of the 17 registered sellers of E15, only 11 had correctly labeled their fuel pumps E15. In other words, 35 percent were not complying with basic labeling standards. Do any of you have confidence that these basic implementation issues will be resolved as E15 becomes more widespread?

AMA response:

See the answer to question No. 1.

As noted with the survey by the National Marine Manufacturers Association that found 35 percent of the retailers in non-compliance with the current labeling requirements, the AMA believes that enforcement will be more difficult with sequestration.

3. In March of last year, EPA issued a blanket approval of a model E15 misfueling mitigation plan that was submitted by the Renewable Fuels Association for use by stations across the country. Do you agree that the plan is "sufficient?"

AMA response:

Last year, the AMA told the EPA that with E15 now coming into the market, our members who make a concerted effort to fuel their motorcycles or ATVs with E10-or-less fuel, may unknowingly refuel with residual E15 left in a blender-pump hose. A blender pump dispenses different fuel blends through the same hose, such as E10 and E15. When a customer buys E15, as much as a third of a gallon of residual E15 is left in the hose, which can inadvertently get into the next customer's vehicle while fueling with E10.

The EPA said: "In an effort to address this potential misfueling issue, EPA approved an industry-submitted [approach] that requires a minimum purchase of four gallons from blender pumps that dispense both E10 and E15 from the same hose and nozzle. Such an approach would prevent misfueling by diluting any residual E15 left in the hose from the previous sale of E15."

However, the AMA objected to this misfueling mitigation plan because our members' fuel tanks' capacities are normally two-to-three gallons on average. Therefore, the AMA did not believe this plan was sufficient.

4. In your testimony, you highlighted the importance of consumer awareness and education with regards to E15. What efforts do you think might be helpful, and what do you think the EPA should have done or could do to better inform and protect the public?

AMA response:

With the EPA using only one test to determine if E15 is safe for vehicles before granting a waiver, the AMA urges the agency to allow for an independent scientific study by the National Academy of Sciences to occur. We also request that motorcycles and ATVs be included in such study.

Again, thank you for the opportunity to testify before the Subcommittee on Environment and to address your follow up questions. If you have any questions, please do not hesitate to contact me by phone, (202) 742-4301, or by email, wallard@ama-cycle.org.

Sincerely,

Wayne Allard

Wayne Allard
Vice President, Government Relations

LETTER TO FORMER SUBCOMMITTEE CHAIRMAN ANDY HARRIS FROM WILLIAM WOEBKENBERG, MERCEDES-BENZ RESEARCH AND DEVELOPMENT, NORTH AMERICA

February 26, 2013

The Honorable Andy Harris
Chairman
House Subcommittee on Environment
House Science, Space and Technology Committee
Washington, DC 20515

Dear Chairman Harris,

In light of your upcoming hearing on "Mid-Level Ethanol Blends: Consumer and Technical Research Needs" I wanted to share with you views from the perspective of an automobile manufacturer. Mercedes-Benz firmly believes that biofuels are an essential element in strengthening our nation's energy security.

In our June 10, 2011 response letter to Congressman Sensenbrenner regarding the Environmental Protection Agency's (EPA) decision to approve E15 usage in cars and trucks of Model Year 2001 and later, Mercedes-Benz has designed, tested and certified vehicles for use of fuel up to E10 in vehicles up to MY 2011.

Our position remains that chronic customer misfueling with E15 will harm emission control systems in Mercedes-Benz engines, leading to significant problems with certification, in-use testing, emission performance and fuel economy. Furthermore, the Company will face an array of product liability actions due to the fact that, while the Mercedes-Benz warranty is clearly restricted to claims involving "proper maintenance", it is impossible for the Company to prove vehicle damage is due to customer misfueling. The deterioration, early wear and aging process depend on the frequency and amount of E15 misfueling, and the failure modes resulting will force Mercedes-Benz and other manufacturers into legal actions at significant disadvantage and substantial cost.

Finally, Mercedes-Benz endorses the recent CRC studies which have shown both engine and fuel system component failures when those systems were subjected to chronic usage of E15 blends. This data serves to further highlight the Mercedes-Benz position that the EPA determination of universal applicability of E15 for all vehicles MY2001-present is flawed and deserves re-consideration.

An analogous topic in biofuels, biodiesel, brings us to another discussion: state mandates of biodiesel content. Much in the same sense as E15 is an unfortunate outcome of the Renewable Fuel Standard 2 (RFS2), the emergence of a "patchwork" of state mandates for biodiesel is also an unforeseen consequence of RFS2.

Customer acceptance of clean diesel technology is a key enabler for GHG compliance and usage of poor quality biodiesel and/or blends greater than B5 can result in engine, fuel system and

emission system damage, which irreparably tarnishes the reputation of clean diesel technology. The inability for customers to fuel their vehicles with the correct diesel fuel due to mandates inhibiting the sale of B5 or lower blends, compromises an otherwise good experience with clean diesel technology. All light duty diesel manufacturers, for both passenger cars and light-duty truck/SUVs MY 2011 and older, restrict biodiesel usage to blends B5 or lower. For MY2012 and 2013, only certain domestic light duty diesel pick-up trucks are approved for biodiesel blends up to B20. In fact, the only passenger car which is approved for biodiesel blends >B5, a 2014 model, was just introduced at the Chicago Auto show recently. Thus, there exists a large and growing legacy fleet of light duty diesel vehicles, which are limited to diesel fuel blends containing B5 or less.

Unfortunately, several states have legislation either pending or enacted which encourage or mandate the use of biodiesel blends far greater than what is approved by Mercedes-Benz and other vehicle manufacturers for the large legacy and new car fleet. Illinois, for example, has recently renewed through 2018 a 6.25% retail fuel tax incentive for sales of blends B11 or greater. While not a mandate in the strict sense, limited diesel fuel retail infrastructure dictates that the most popular fuel (usually the fuel at the cheapest cost to the consumer) is what is sold. Thus it is increasingly more difficult for Mercedes-Benz customers to refuel their vehicles with the appropriate fuel in Illinois as the majority of retail stations are forced to offer B11 blends over B5 blends to remain financially competitive with other fuel retail outlets in the vicinity.

Minnesota has a B10 mandate poised to be potentially be enacted in 2013, which would remove even a limited choice of B5 stations, as currently the case in Illinois, and simply require retail outlets to offer only B10 biodiesel blends. Furthermore, a B20 mandate is scheduled to be triggered in 2015 which only compounds the issue.

Other states have biodiesel mandate legislation pending or enacted with in-state production volume or other triggers, all driven by the renewable volume obligations of RFS2.

Mercedes-Benz encourages a thorough review of such mandates which provide an untenable patchwork of state-specific diesel fuel composition, and offers a solution that a national B5 limit be considered as an alternative method to ensure biofuel obligations of RFS2 are satisfied.

Again, thank you for the opportunity to present our views on this important subject.

Sincerely,

William Woebkenberg
Fuels Technical and Regulatory Affairs
Mercedes-Benz Research and Development North America

Cc: The Honorable Suzanne Bonamici

MEMO FROM COORDINATING RESEARCH COUNCIL, INC.(CRC)

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May 2012

Subject: An open letter from the Coordinating Research Council

On May 16, 2012, the Coordinating Research Council (CRC) issued a report, CRC Project No. CM-136-09-1B *Intermediate-Level Ethanol Blends Engine Durability Study.* This report was only one of a series of reports undertaken by CRC to understand the comprehensive nature of ethanol blended fuel and the impact that such a fuel may have on legacy fleet vehicles. In particular, the Intermediate Level Ethanol Blends Engine Durability Study presented the results of an engine durability program on late-model vehicle engines tested on gasoline with ethanol blended at 20 and 15 volume percent as well as straight gasoline (i.e. no blended ethanol). The results of this report have generated a substantial amount of interest in how CRC conducts its research and manages its research programs. This open letter provides additional background on CRC's role.

The Coordinating Research Council (CRC) is a non-profit organization that directs, through committee action, engineering and environmental studies on the interaction between automotive/other mobility equipment and petroleum products. The Sustaining Members of CRC are the American Petroleum Institute (API) and a group of automobile manufacturer members (Chrysler, Ford, General Motors, Honda, Mitsubishi, Nissan, Toyota, and Volkswagen). CRC research programs are managed by five technical committees (Advanced/Vehicle/Fuel/Lubricants, Atmospheric Impacts, Emissions, Performance, and Aviation.)

CRC has been conducting studies on the performance of engines, fuels, emissions and vehicles since circa 1919. We have, more so than any other organization, been the source of research that has been used to help establish the specifications for gasoline and diesel fuels' performance in the United States. CRC has for many years worked with not just the automotive and energy industries but also government agencies (e.g. the Environmental Protection Agency, the Department of Energy, and California Air Resources Board) and others (e.g. the Renewable Fuels Industry, Universities, National Laboratories, and other research organizations). CRC values these relationships and cooperation and looks forward to future cooperation with DOE, EPA, the ethanol industry and others with an interest in scientific research.

CRC works hard at maintaining its reputation for unbiased research. In fact, one Congressional staff member when calling recently stated, "I understand that CRC is the *Gold Standard* for research projects like this." CRC's legacy and current reputation for unbiased sound science research is a precious commodity for which we have diligently worked to maintain by continuing our long standing pattern of committee-managed, consensus-driven research. Part of that requirement is a strict policy for CRC to take no advocacy positions, regardless of the outcome of its research programs. Consistent with this, CRC does not advocate either the introduction or prohibition of E15 into the U.S. fuels market. CRC's role is to conduct relevant scientific programs for the benefit of the public. The advocacy statements relating to E15 after the release of CRC's study were authored by others and are not from CRC.

However, CRC has the right and even the obligation to defend its research to all challengers. Our research program on engine durability, Project No. CM-136-09-1B *Intermediate-Level Ethanol Blends Engine Durability Study,* was performed correctly and properly, using the best scientific methods available, making the most efficient use of available resources. CRC is a transparent organization with all results published and available to the public free of charge from our website upon project completion.

The CRC Board of Directors recognized how important and impactful this work may be, so prepublication results were made available for review on our website. During the progress of the research program, multiple stakeholder meetings were held with presentations on the interim progress and results. These meetings were held in Washington, DC with many stakeholders participating, including representatives of DOE, and EPA, and ethanol trade associations. Throughout all those meetings, there were no complaints or criticisms of our research programs.

In conclusion, CRC wants to emphasize that our intention is to continue to perform unbiased scientific studies and publish these results to the public for review. We will take no advocacy position, but will stand behind our work. CRC continues to value the close working relationships we have with our sponsors, government agencies such as EPA and DOE and other stakeholders such as the ethanol industry. CRC looks forward to continued close cooperation together with all these stakeholders on future scientific studies.

Brent Bailey
Executive Director
Coordinating Research Council

LETTER TO SUBCOMMITTEE ON ENVIRONMENT FROM RENEWABLE FUELS ASSOCIATION

RFA RENEWABLE FUELS ASSOCIATION

February 25, 2013

The Honorable Andy Harris
Chairman
Subcommittee on Environment
Committee on Science, Space and Technology
U.S. House of Representatives

The Honorable Suzanne Bonamici
Ranking Member
Subcommittee on Environment
Committee on Science, Space and Technology
U.S. House of Representatives

Dear Chairman Harris and Ranking Bonamici:

The Renewable Fuels Association (RFA) is the national trade association representing the U.S. ethanol industry. The Subcommittee's hearing on the "science" of E15 seems inexplicably one-sided and devoid of an impartial discourse about science. As no representative from the ethanol industry was invited to testify, we wanted to be sure the Subcommittee was provided the perspective of American ethanol producers and marketers.

Fundamentally, the debate about E15 should be one of consumer choice. There is no requirement that gasoline marketers offer E15 and no mandate for consumers to buy it. However, for those marketers that want to offer their customers a higher octane alternative to petroleum, E15 is a great option. As gasoline prices across the country continue to climb, threatening household budgets and economic recovery alike, ethanol continues to provide consumer savings at the pump. Today, ethanol is priced approximately $0.80 below the wholesale costs of gasoline. Beyond its gasoline displacement benefit, as ethanol now represents 10 percent of the nation's motor gasoline supply, it has greatly reduced the need for imports and provided a macroeconomic benefit to gasoline prices. Depending on the study you choose, the increased use of ethanol in 2011 saved consumers between $0.89 and $1.09. Those savings would only be enhanced by the use of ethanol in higher blends.[1]

Unfortunately, due to the hyperbolic rhetoric and scare mongering by the major oil companies concerned about losing even more market share to domestically produced renewables, today there are

1. [1]Hayes, Dermot J., Du, Xiaodong (May 2012) The Impact of Ethanol Production on U.S. and Regional Gasoline Markets: An Update to 2012. *Center for Agricultural and Rural Development (CARD). http://www.card.iastate.edu/publications/dbs/pdffiles/12wp528.pdf.*
Marzoughi, Hassan and *Kennedy, P. Lynn. February 2012.* The Impact of Ethanol Production on the U.S. Gasoline Market .
http://ageconsearch.umn.edu/bitstream/119752/2/Kennedy%20Marzoughi%20SAEA%20-%202012.pdf

only about 12 stations across the entire country offering this fuel to consumers with 2001 and newer vehicles. While we want that market share to grow, the attention these 12 stations are attracting seems wildly disproportionate to the potential harm, particularly when viewed in the context of other fuel quality issues with demonstrable negative consequences for consumers and air quality. For example, in many mountain states today refiners are selling a sub-octane gasoline that is not covered under any car manufacturer's warranty. It is well understood that less than 87 octane gasoline will cause engine damage and undermine emissions control systems, yet refiners continue to supply cheaper gasolines with 85 octane. Where is the outrage about that? When will there be a Committee hearing about inferior gasoline threatening our air and engines? The myopic focus of this Committee on E15, to the exclusion of other more significant gasoline quality issues, fuels cynicism and leads to the inescapable conclusion that this is about market share, not safety.

Indeed, if one were to look only at the science, the efficacy of the U.S. Environmental Protection Agency's (EPA) decision to allow E15 to be sold would be clear. EPA's decision was based on sound technical data, following the most robust test program ever conducted by the Federal government for a CAA Section 211(f) fuel waiver, and finalized only after a lengthy public rulemaking process in which the auto industry provided no data demonstrating a single emissions, materials compatibility or driveability problem associated with the use of E15. E15 has been the most aggressively and comprehensively tested fuel in the history of the EPA. The miles driven on E15 equate to 12 round trips to the moon and back without a single failure.

The EPA approved E15 blends to for use in cars, pickups and SUVs built in 2001 and later, or about two-thirds of the vehicles on the road today. E15 is a safe fuel, as evidenced by the fact auto manufacturers are now providing warranty coverage for it. Today, more than 40 model year 2012 and 2013 vehicles include E15 in the fuel recommendations section of the owner's manual.

In their quest to derail E15, the oil industry has ignored the U.S. Department of Energy test program and funded a study of its own using highly questionable protocols and vehicles. I have attached a critique of the oil company study for the record, but the most damning fact for this Committee to consider is that the study utilized an unrealistic "aggressive" fuel blend spiked with contaminants not found in the marketplace and some of the vehicles selected were under recall for fuel pump failures. It was not a scientific test; it was a well-planned defamation of a perfectly safe fuel. How can the E15 detractors explain, for example, that E25 has been used in Brazil for over 30 years with none of the catastrophic consequences they suggest?

EPA's rulemaking approving E15 for only certain engines did raise issues regarding the potential for misfueling. The RFA has been sensitive to those concerns and worked diligently with EPA and stakeholders to assure that E15 is only used by consumers with 2001 and newer vehicles. The RFA has developed the only Misfueling Mitigation Plan approved by EPA. That plan must be adopted by gasoline marketers before they can legally offer E15 for sale. The RFA has published and distributed an E15 Retailer Handbook taking marketers through all of the steps necessary to properly handle E15 – from which underground storage tanks are approved for E15 to proper labeling language and placement to registration and reporting to EPA. The RFA has also helped organize a public outreach campaign to inform consumers about the use of E15. We want E15 to be used, but we want it to be used safely and within the bounds of EPA's approval.

Toward that end, the RFA has responded to concerns raised by various stakeholders, including motorcyclists and small engines, and sought and received approval from the EPA for additional flexibility for retailers offering E15, ensuring that gasoline with up to 10 percent ethanol is available at each station when also offering the higher octane fuel E15. The new configuration will eliminate the need for a four-gallon minimum fueling transaction when E15 is sold from the same hose as E10, E0

or both. Advocates for motorcyclists and small engines had expressed concern that EPA's four-gallon minimum requirement would make it difficult for those low volume customers to find fuel appropriate for their vehicles. Those concerns have now been eliminated. The configuration approved by EPA will recommend that retailers either sell E15 from a dedicated hose, or have at least one fueling position that does not have E15 available. This fueling position will be clearly identified, and other fueling positions will direct those seeking that option to the right place. EPA may ultimately approve more configuration options in the future. The U.S. ethanol industry clearly heard stakeholders' concerns and we moved quickly to address them.

Overcoming the "blend wall" issue is paramount to the success of the RFS. Cellulosic and advanced ethanol will largely represent the renewable fuel supply beyond the E10 blend market. To leave the market artificially constrained further limits market opportunities for next generation biofuels very close to commercialization, missing an opportunity to meaningfully increase America's use of renewable fuels and reduce our dependence on imported oil. The RFA is working diligently with the petroleum industry, gas retailers, automakers, and consumers to ensure E15 is used properly. The RFA looks forward to working with you to further develop and implement sound policies around the science of E15.

Sincerely,

Bob Dinneen
President & CEO

"GETTING IT RIGHT: ACCURATE TESTING AND ASSESSMENTS CRITICAL TO DEPLOYING THE NEXT GENERATION OF AUTO FUELS," BY PATRICK B. DAVIS

Home

Getting It Right: Accurate Testing and Assessments Critical to Deploying the Next Generation of Auto Fuels

May 16, 2012 - 9:20am

Patrick B. Davis
Vehicle Technologies
Program Manager

The Energy Department's all-of-the-above approach to American energy is driven by cutting-edge research and innovation from our world-class national laboratories, leading universities, small business entrepreneurs and other industry partners. This is JUST as true for the Vehicles program that I manage within the Office of Energy Efficiency and Renewable Energy, as it is for the Office of Nuclear Energy, the Office of Science and all other offices here at the Department. Amongst all of these experts spanning many different fields, there is a consensus that accurate, thorough and tested assessments of technology are critical to understanding our progress and identifying the best opportunities for breakthroughs.

Today, a research organization for jointly-funded work by the auto and oil industries, called the Coordinating Research Council (CRC), released a report on the effects of E15 and E20, or gasoline mixed with up to 15 or 20 percent ethanol, respectively, on vehicle engines. The study claims mechanical damage and suggests degraded engine performance, emissions and durability on conventional vehicles from the use of E15 or E20 fuel. We believe the study is significantly flawed.

The CRC failed to establish a proper control group, a standard component of scientific, data-driven testing and a necessity to determine statistical significance for any results.

- Instead, only three out of the eight engines were tested with straight gasoline containing no ethanol (E0), and one of those three failed the CRC's test.
- **No engines were tested with E10 fuel, the *de facto* standard gasoline for all grades, which represents more than 90 percent of gasoline available in the U.S. market. Even though E10 fuel has been in the market for over 30 years and is used in all current conventional gasoline vehicles and small non-road engines, it was not part of the CRC test program.**
- The CRC also employed a test cycle designed specifically to stress the engine valve train. This test cycle was developed specifically for this study and thus there is no experience base for how to interpret results from the testing.
- The CRC used the arbitrary criterion of 10 percent engine leakdown (a diagnostic test in which an engine cylinder is pressurized with compressed air, and the rate at which the cylinder loses pressure is measured) to determine if an engine "failed." This is not a standard previously employed by either industry or federal agencies during testing, nor as a criterion for any warranty claims. Further, the Energy Department's own rigorous testing has shown that it is not reliable indicator of durability issues.
- Perhaps most surprisingly, the CRC decided to select several engines already known to have durability issues, including one that was subject to a recall involving valve problems when running on E0 gasoline and E10. It is no surprise that an engine having problems with traditional fuels might also "fail" with E15 or E20 ethanol-blended fuels -- especially using a failure criterion chosen to demonstrate sensitivity to ethanol and operated on a cycle designed to stress the valves.

Prior to the CRC's findings, the Energy Department conducted its own rigorous, thorough and peer-reviewed study of the impact of E15 fuel on current, conventional vehicle catalyst systems. The Energy Department study included an inspection of critical engine components, such as valves, and did not uncover unusual wear that would be expected to impact performance. Rather

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than using an aggressive test cycle intended to severely-stress valves, the Energy Department program was run using a cycle more closely resembling normal driving. The Energy Department testing program was run on standard gasoline, E10, E15, and E20. The Energy Department test program was comprised of 86 vehicles operated up to 120,000 miles each using an industry-standard EPA-defined test cycle (called the Standard Road Cycle). The resulting Energy Department data showed no statistically significant loss of vehicle performance (emissions, fuel economy, and maintenance issues) attributable to the use of E15 fuel compared to straight gasoline. The Energy Department test program also showed that 10% engine leakdown is not a reliable indicator of vehicle performance. In the Energy Department program, there were vehicles found to exceed 10% leakdown for all fuels, including vehicles running on E0 and E10. There was no correlation between fuel type and leakdown, and high leakdown measurements did not correlate to degradation in engine or emissions performance.

We believe the choice of test engines, test cycle, limited fuel selection, and failure criteria of the CRC program resulted in unreliable and incomplete data, which severely limits the utility of the study.

LETTER TO SUBCOMMITTEE ON ENVIRONMENT FROM ALGAE BIOMASS ORGANIZATION

Mary Rosenthal
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February 22, 2013

The Honorable Andy Harris
Chairman, Environment Subcommittee
House Committee on Science, Space, and Technology
2321 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Suzanne Bonamici
Ranking Member, Environment Subcommittee
House Committee on Science, Space, and Technology
394 Ford House Office Building
Washington, D.C. 20515

Dear Chairman Harris and Ranking Member Bonamici:

On behalf of the more than 250 members of the Algae Biomass Organization (ABO), thank you for your interest in alternative fuels. As you contemplate policies which would promote the use of domestically produced fuel, I appreciate the opportunity to provide you information about the work the algae industry is doing.

For more than 30 years, research has been conducted on the potential to produce fuel from algae. It is a common-sense alternative to fossil fuel when one considers the source of fossil fuel: prehistoric algae. Technology today allows us to replicate in a matter of days the million year process of creating fuel from algae. Researchers and industry leaders are working every day to produce algae-based fuel at a price competitive with fossil fuel. In fact, in a recent industry survey 47% of industry respondents said they thought it was "extremely likely" or "very likely" that algae-based fuels would be cost-competitive with fossil fuels by 2020. We believe this fuel will be attractive to consumers and encourage you to develop federal policies which will allow consumers to access algae-based fuel as part of an "all of the above" fuel solution.

Algae bring enormous advantages to biofuel production. Algae can be grown on lands unsuitable for other types of agriculture and have fuel yields between 2,000-5000 gallons per acre—many times greater than other crops. They can dramatically diminish the "food vs. fuel" debate that often comes with other biofuel crops.

Algae can also be grown without impacting freshwater supplies, instead thriving in saltwater or even waste water from which they can remove contaminants as they grow. Algae are unique in that they can be used to produce a variety of fuels from ethanol to gasoline to jet fuel. Below is a brief description of the many fuels which can be produced from algae:

Green Gasoline. Algae can be a feedstock for a gasoline alternative, commonly referred to as 'green gasoline'. Like renewable aviation fuels, green gasoline is a 'drop-in' replacement, meaning it chemically mimics the properties of petroleum-based gasoline. As a result, green gasoline could be used at any blend level, in any gasoline engine.

Ethanol. Ethanol can be produced within the cell of enhanced algae designed to excrete this valuable fuel. Algenol Biofuels employs more than 120 scientists and engineers in Ft. Myers, FL where they recently finished construction of a 36-acre integrated biorefinery that will begin operations this quarter and will ultimately produce 100,000 gallons of algae-based ethanol each year demonstrating commercial viability of the technology. The ability of Algenol's algae to produce ethanol directly could potentially drive the cost of this algae-based ethanol down significantly. It will be important to continue to support the high-blend infrastructure of FlexFuel/E-85 pumps to accommodate increasing volumes of ethanol derived from algae and other feedstocks.

Butanol. Another alcohol fuel from biomass is butanol, and the related iso-butanol, which are attracting considerable attention. Butanol production from seaweeds is being pursued by several research groups, including one created as a joint venture of DuPont and Bio Architecture Lab, Inc., in Berkeley, California, under an $8.8 million Department of Energy grant.

Biodiesel. Researchers and innovators have long recognized the potential of algae to help provide commercial quantities of biodiesel. In fact, the primary focus of researchers in the Department of Energy's Aquatic Species Program in the 1980s and early 1990s was on producing biodiesel from algae.

Renewable Aviation Fuel. Algae-based fuels are not limited to just powering cars and trucks across the country. A number of companies and researchers are also focusing on algae as a source for renewable aviation fuels – also known as biojet fuel. A number of companies are working on developing biojet fuel from algae, including: Sapphire Energy; Heliae, Phycal, and Solazyme. Renewable aviation biofuels made from algae have already been successfully tested in both commercial and military aircraft, and they have been approved by the world's standard body for use in commercial flights. In January 2009, Continental Airlines made history with the first-ever test flight of a commercial jet in the US with algae-based fuel as part of its biofuel blend. In June 2011, the US Navy successfully demonstrated a 50-50 blend of traditional and algae-based jet fuel in a MH-60S Seahawk helicopter. In November, 2011, United Flight 1403 flew from Houston to Chicago, on a 40 percent blend of Solazyme's algal jet fuel, becoming the first U.S. commercial flight powered in part by algae-based biofuel.

Other Biofuels. The above does not exhaust the potential list of biofuels that can be derived from algae. Hydrogen production from algae has been studied for many years and could be successful with continued research and development. Many other biofuels are currently being developed from bacterial and yeast fermentations of sugars. Microalgae could also be used to produce these in the future, avoiding the need for the production of sugars by traditional crops. Indeed, the production of sugars themselves by microalgae is being proposed, sugars that would then be used in fermentations to produce biofuels.

All in all, the potential of algae to produce a variety of fuels is yet to be fully explored.

The Algae Biomass Organization supports policies which promote continued progress in developing domestic fuel at a price which is cost-competitive with fossil fuel. ABO members support a U.S. fuel portfolio and delivery

system which fosters competition in the marketplace, driving down the cost of fuel and giving consumers the choices they desire.

Sincerely,

Mary Rosenthal

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LETTER TO SUBCOMMITTEE ON ENVIRONMENT FROM GROWTH ENERGY

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February 25, 2013

Representative Andy Harris
Chairman, Subcommittee on the Environment
House Committee on Science
2321 Rayburn House Office Building
Washington, DC 20515

Representative Suzanne Bonamici
Ranking Member, Subcommittee on the Environment
House Committee on Science
2321 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Harris and Ranking Member Bonamici:

Growth Energy is the nation's leading association of ethanol producers and supporters. We represent 80 American biorefineries that produce over 4 billion gallons of ethanol annually. Overall, America's ethanol industry sustains $50 billion in economic activity, supporting more than 400,000 U.S. jobs by producing nearly 14 billion gallons of American-made, renewable fuel in 200 plants nationwide.

I am writing you with concern regarding the hearing scheduled for February 26th entitled, "Mid-Level Ethanol Blends: Consumer and Technical Research Needs". This hearing appears to be in line with several other hearings you have held over the past two years regarding mid-level ethanol blends and specifically E15. We are concerned that these hearings have only presented one side of the story only highlighting witnesses who have been some of our most vocal critics and have failed to include any representatives of the ethanol production industry and the 200 biorefineries across the country. As such, we are writing to you today to present the facts about E15 to be included into the hearing record.

Despite the claims of our critics, E15 is a voluntary fuel choice that provides a less expensive motor fuel to the consumers. It is also one of the most tested fuels in history. Before approval, the Department of Energy tested 86 vehicles on E15 for six million miles, without any concerns. Furthermore, NASCAR just ran over three million miles on E15 the past two seasons without any problems, noting only an increase in horsepower and performance.

After 36 consecutive days of steady increases in gas prices, which have set records for the highest prices ever in the month of February, I believe that access to a safe, reliable and price competitive fuel should be a top priority. Now, more than ever, it is essential to ensure consumers have the ability to save a few more of their hard earned dollars at the pump, by providing a choice during these difficult economic times.

History has shown that high gas prices forestall economic growth and your legislation prevents a cheaper, ***voluntary*** alternative during stagnant economic conditions, which only puts further hardship on the consumer and prevents much needed economic growth.

E15 is not mandatory, rather it is a ***voluntary*** choice for both the retailer to sell and the consumer to buy – there is no logical reason that the most tested fuel in history should be blocked from the commercial

marketplace. E15 provides the consumer with a choice and savings, a choice that consumers should have, especially in this time of exorbitant gas prices.

Increased blends of biofuels, such as E15 really do make a difference when it comes to consumer savings. A recent Louisiana State University study found that since the U.S. produced 13.8 billion gallons of ethanol in 2011, this study indicates that U.S. drivers saved roughly 83 cents a gallon in 2011, totaling $111.22 billion in annual savings.

No credible evidence has been provided that shows E15 would damage 2001 and newer vehicles. In fact, the majority opinion coming out of the District of Columbia Circuit Court of Appeals this past summer clearly pointed out that there was no data available to support any claims of engine damage, noting the data provided was, "hardly evidence of a substantial probability that E15 will cause engine harm."

Furthermore, the Environmental Protection Agency has been clear that E15 is only approved for 2001 and newer passenger vehicles. In fact, it would be ***illegal*** for consumers to use or retailers to sell E15 to non-approved engines such as boats, snowmobiles, chainsaws or motorcycles.

American motorists should have the ability to choose their fuel based on price and performance, and should not be denied the choice of a less expensive, ***voluntary***, higher performing fuel.

E15 is cleaner and better for our environment, not to mention no beaches have ever been closed because of an ethanol spill. It helps revitalize rural economies, creating jobs and spurring investment, all while saving consumers at the pump and reducing our dependence on foreign oil. There will come a time when finite resources, like oil will be depleted. We must begin the work now to prepare for a smooth transition in future generations, and the adoption of greater blends of homegrown, renewable biofuels, such as E15, is a critical first step. Not only will this help rural America, our economy and our environment, but it also will help the United States develop a strategic military advantage if we are no longer beholden to energy imports from other nations to meet our military's energy needs.

The bottom line is that E15 is a homegrown, American renewable fuel that creates jobs that cannot be outsourced, it is better for our environment and the air we breathe and E15 will reduce our dependence on foreign oil and providing consumers a choice and savings at the pump. This fuel really is a win-win for America and no consumer should be denied the ***voluntary*** choice of a less expensive fuel when they fill up – especially under the current climate of endless increases in the cost of gas.

I would appreciate the opportunity to meet with you and your staff to discuss your any technical research needs you may have with regard to E15 and mid-level ethanol blends. Our members are some of the foremost experts in the world on ethanol blends and would be happy to discuss some of the years of research we have done in this area. Thank you for your time and consideration and I look forward to speaking with you further on this matter.

Sincerely,

Tom Buis

Tom Buis, CEO
Growth Energy

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